RECLAMATION

Managing Water in the West

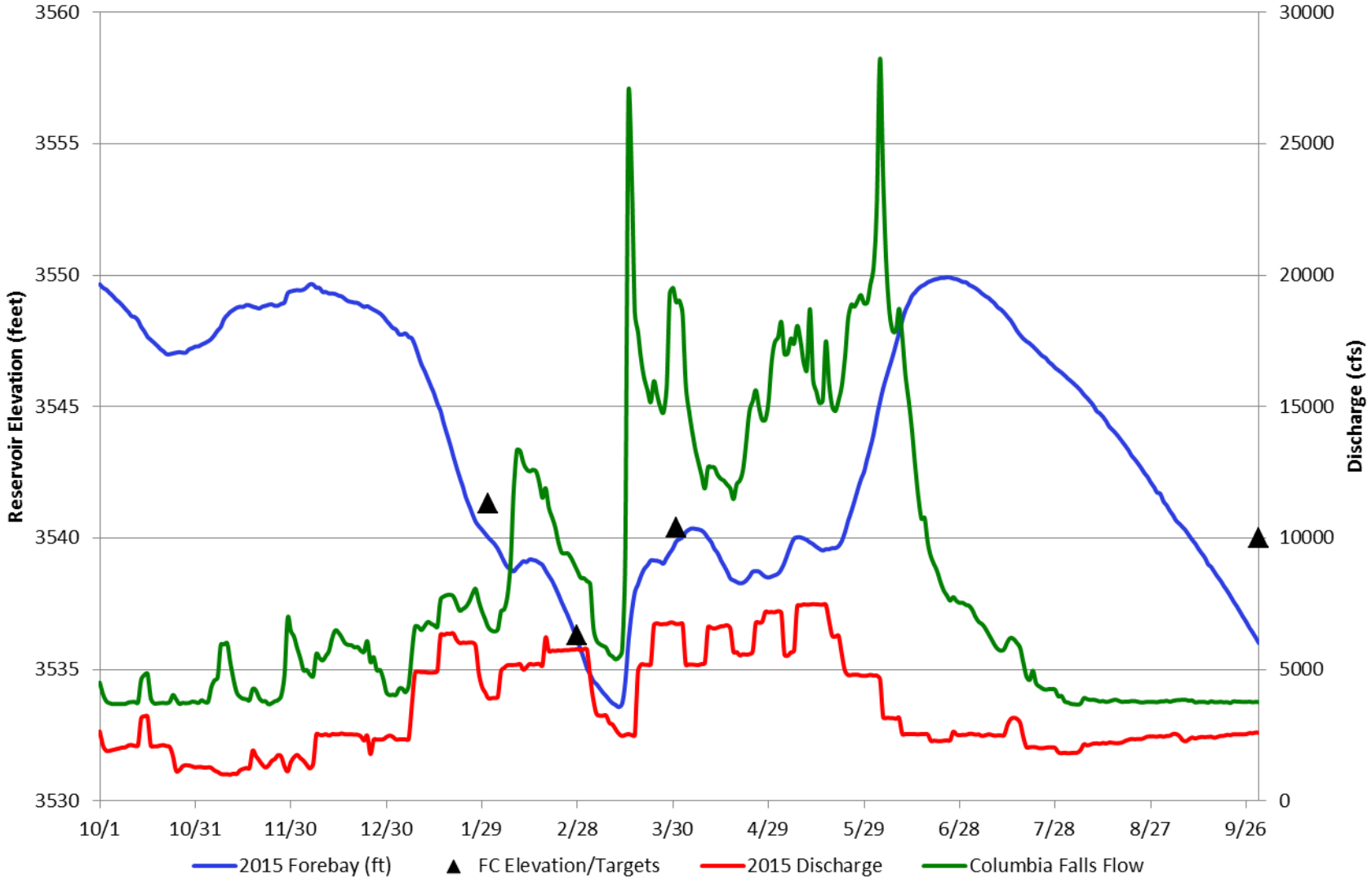
2015 Operations and 2016 Outlook for Hungry Horse and Como

U.S. Department of the Interior
Bureau of Reclamation

2015 Runoff

- Hungry Horse Reservoir - Actual April through August runoff was 1,231,660 acre-feet which was 64 percent of the 30-year average.
- After flood control requirements were completed, Hungry Horse filled to 3550 feet (10 feet below full).
- During the summer water was discharged to help meet minimum flow requirements in the Flathead River and was drawn down below the 20 foot requirement at the end of September.

Hungry Horse Operations (WY 2015)



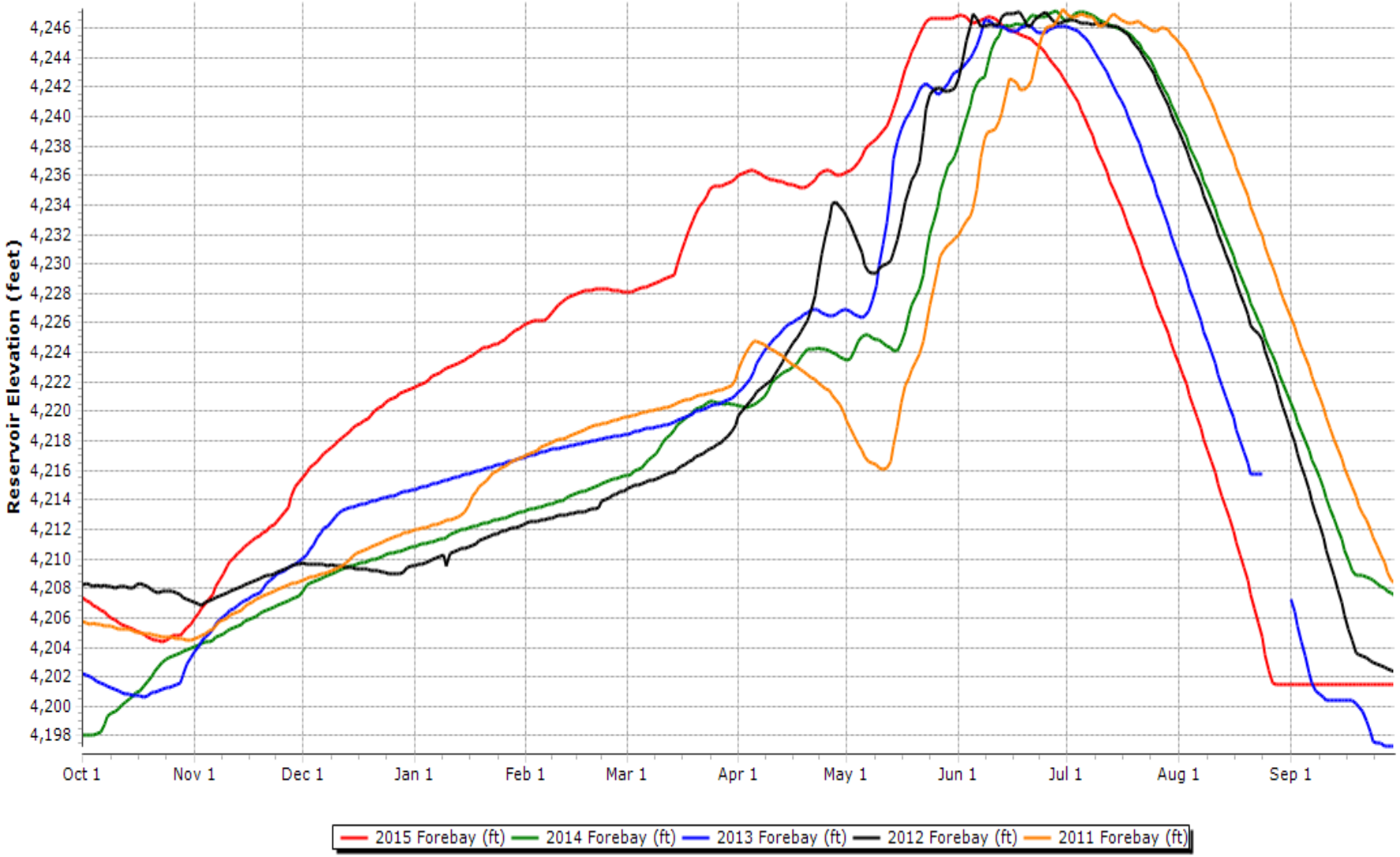
RECLAMATION

Hungry Horse 2016 Outlook

- NWRFC ESP water supply forecast (issued Oct 13) is around 97% of average for April-July inflow volume into Hungry Horse.
- The first official operating forecast will be released in January 2016.

RECLAMATION

Lake Como Elevations 2011-2015



RECLAMATION

Como 2016 Outlook

- As of Oct 14, 2015, Como is at elevation 4201.5 ft which is average for this time of year.
- NWRFC ESP water supply forecast (issued Oct 13) for the Bitterroot near Darby is around 87% of average for April-July runoff volume.

RECLAMATION

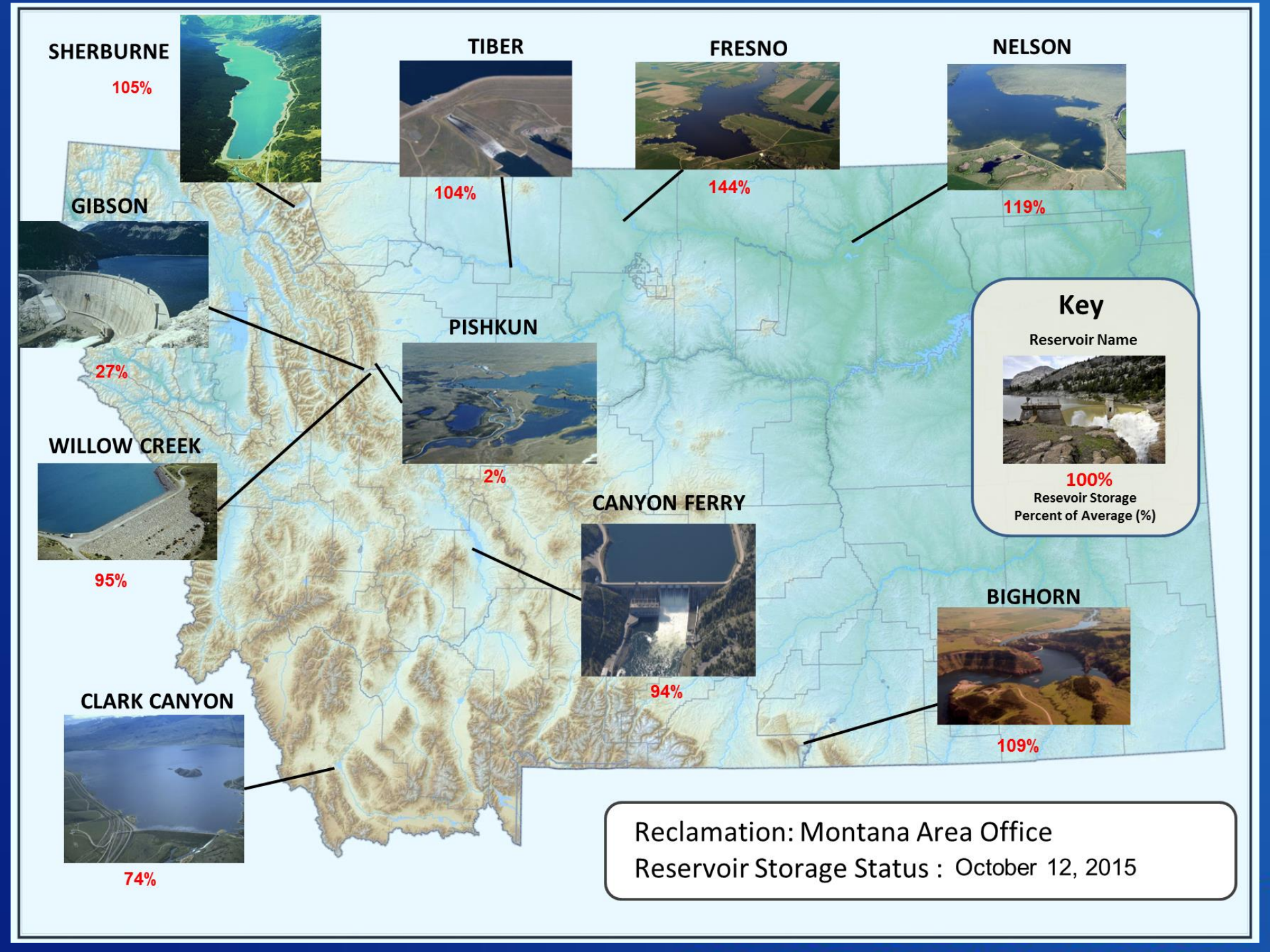
Managing Water in the West

River and Reservoir Status Briefing

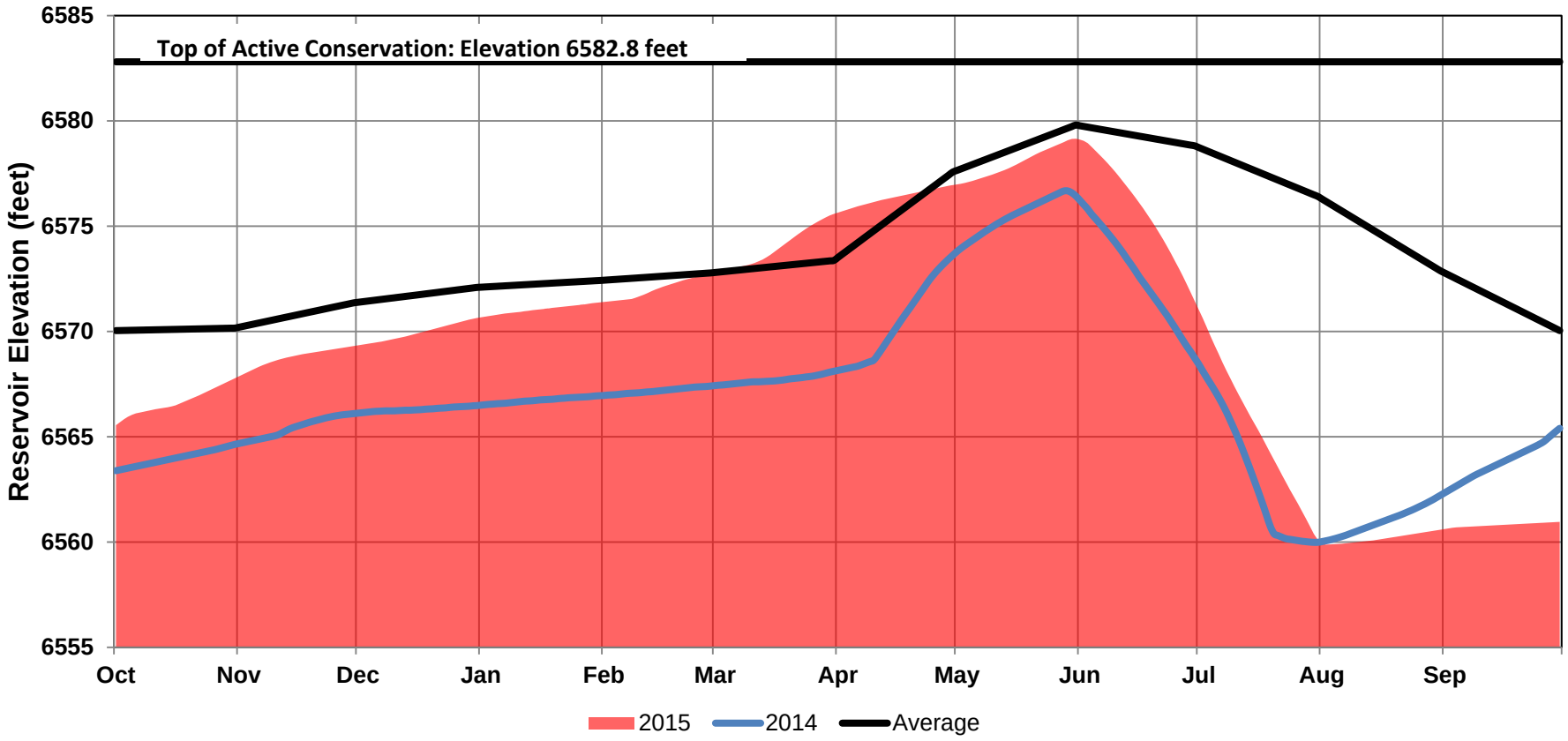
RESERVOIR AND RIVER OPERATIONS

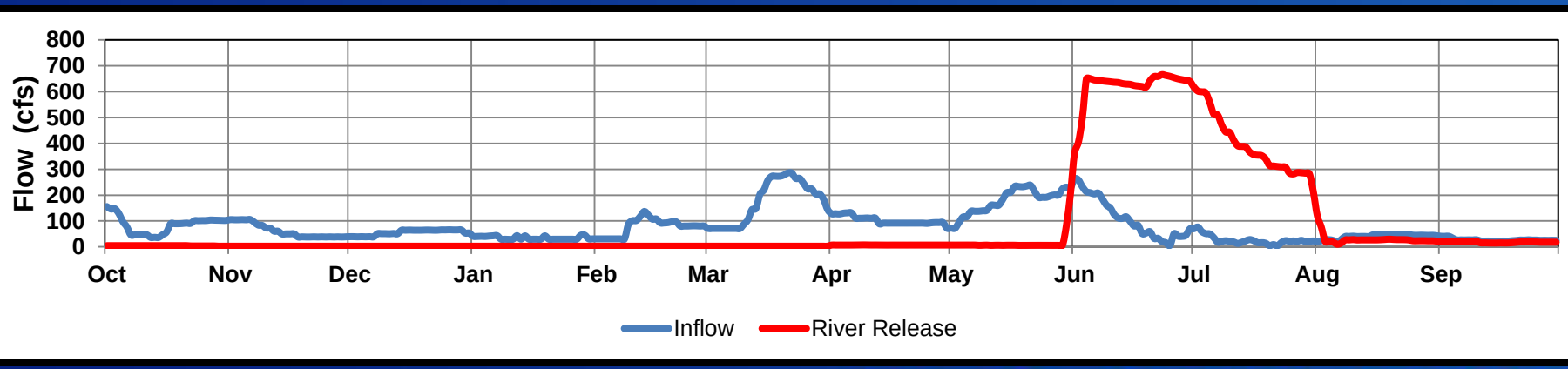
Montana Area Office
Billings
October 15, 2015

U.S. Department of the Interior
Bureau of Reclamation

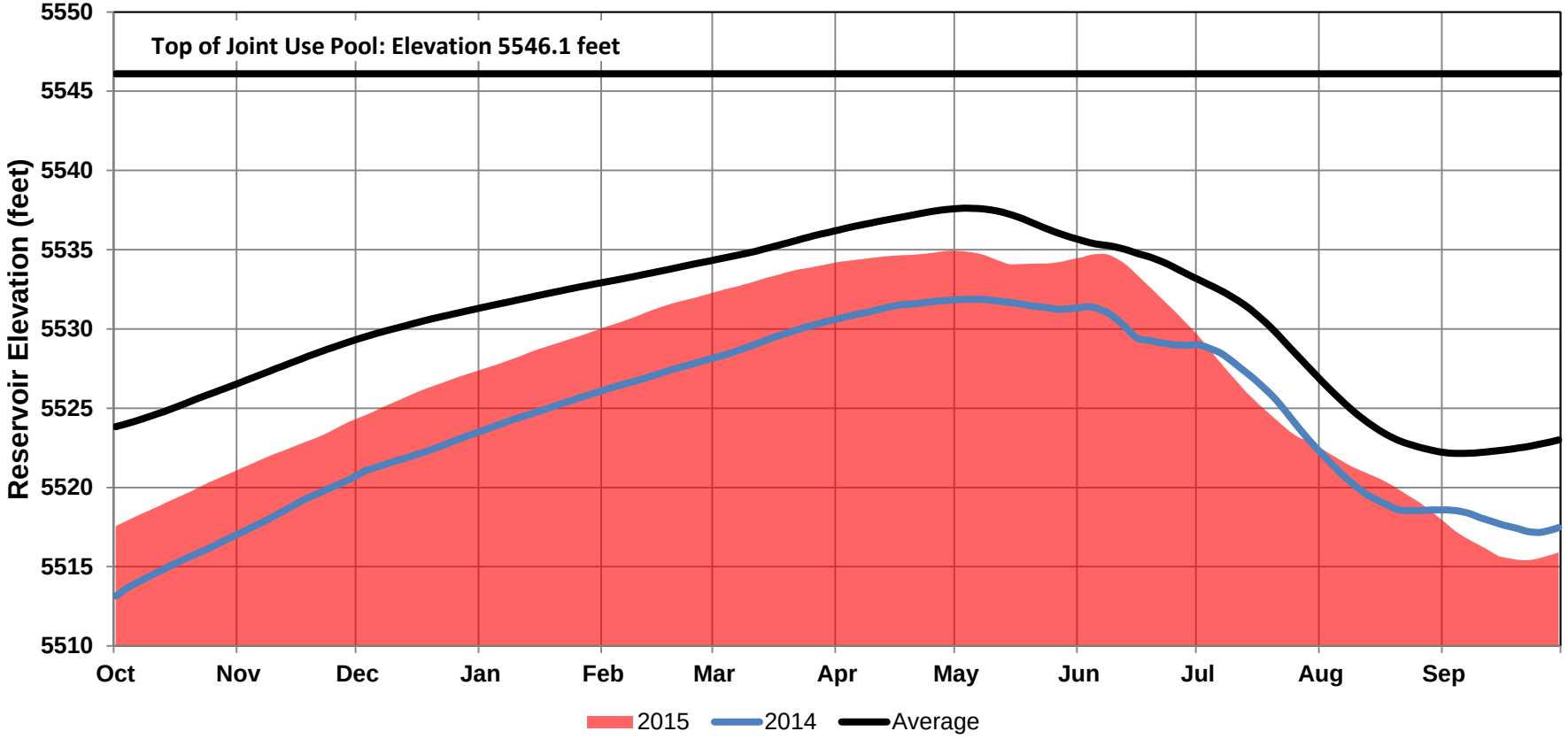

SHERBURNE
105%
TIBER
104%
FRESNO
144%
NELSON
119%
GIBSON
27%
PISHKUN
2%
WILLOW CREEK
95%
CANYON FERRY
94%
BIGHORN
109%
CLARK CANYON
74%
Key
Reservoir Name
100%
Resevoir Storage
Percent of Average (%)
Reclamation: Montana Area Office
Reservoir Storage Status : October 12, 2015

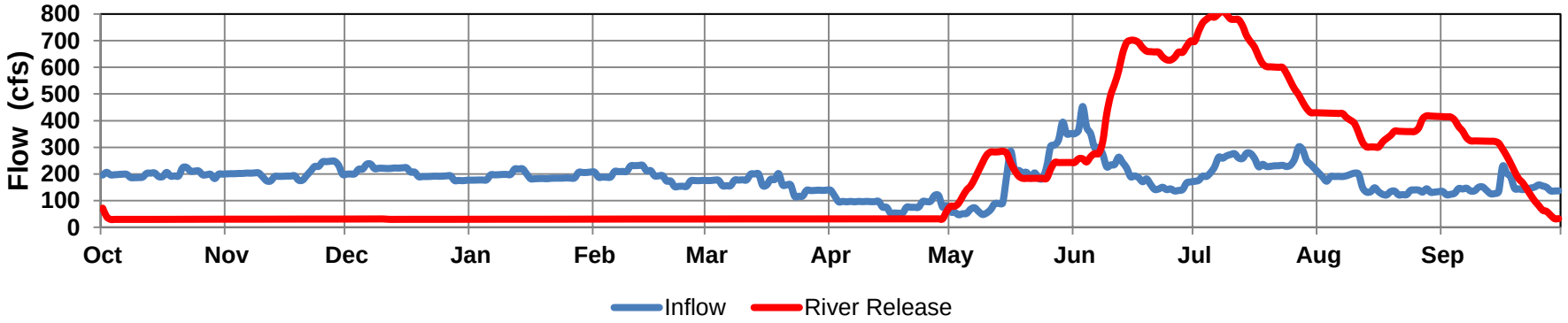
Lima Reservoir Operations



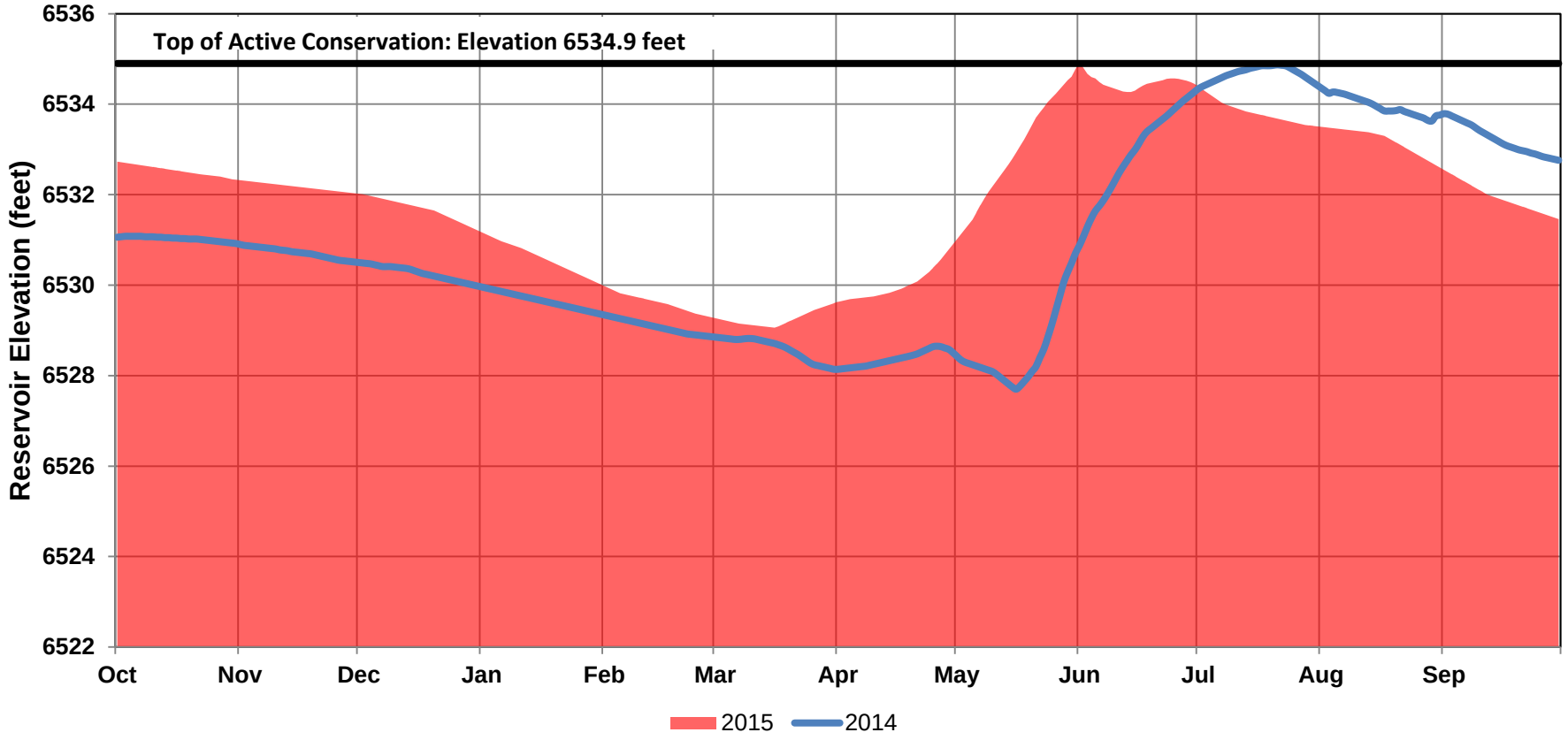


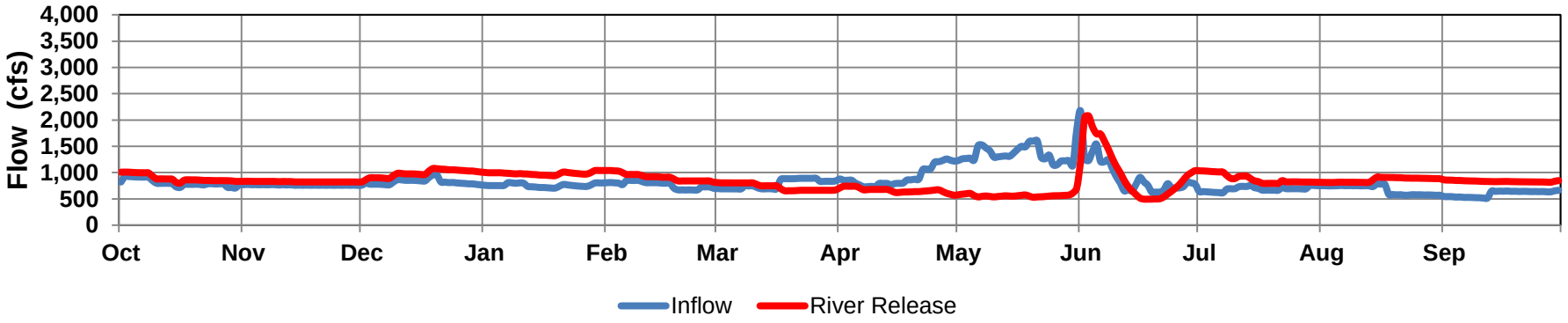
Clark Canyon Reservoir Operations



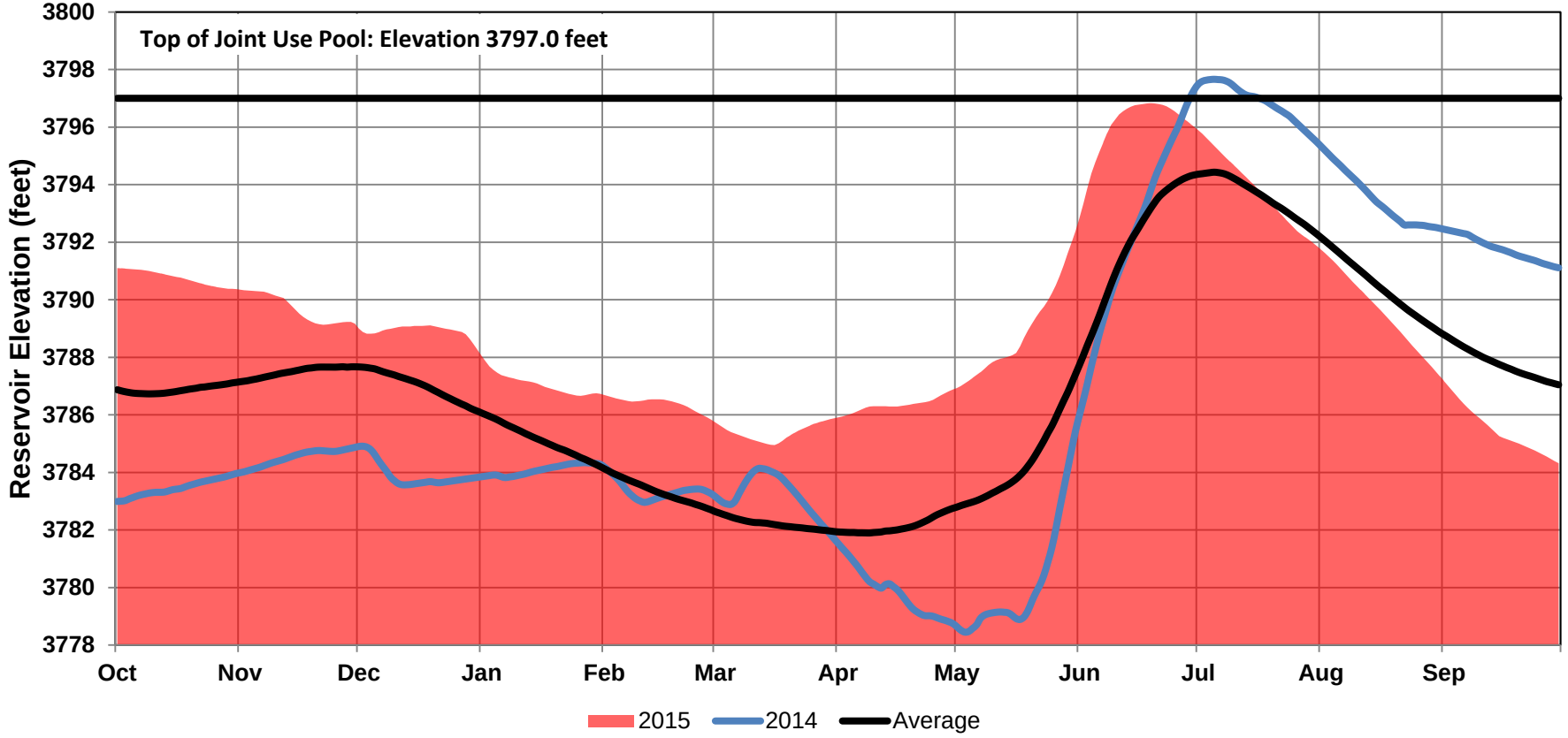


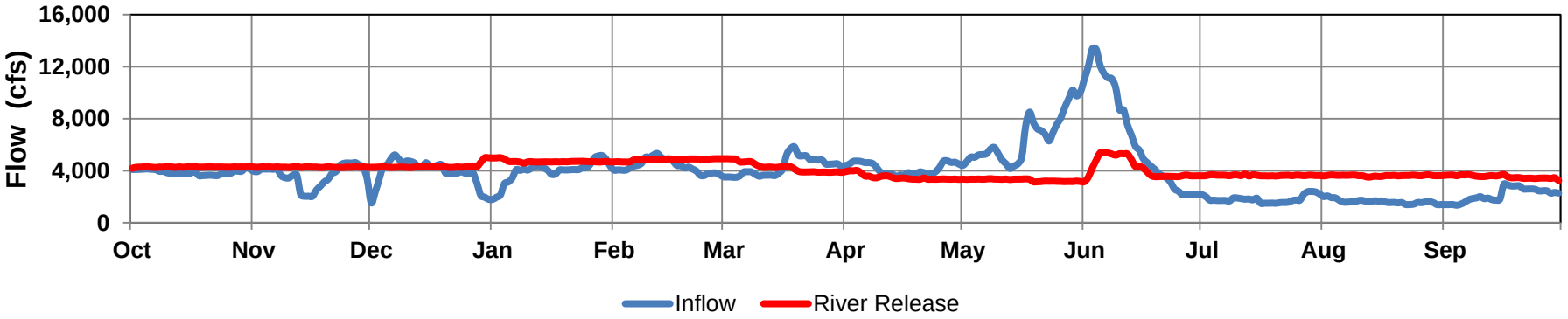
Hebgen Reservoir Operations



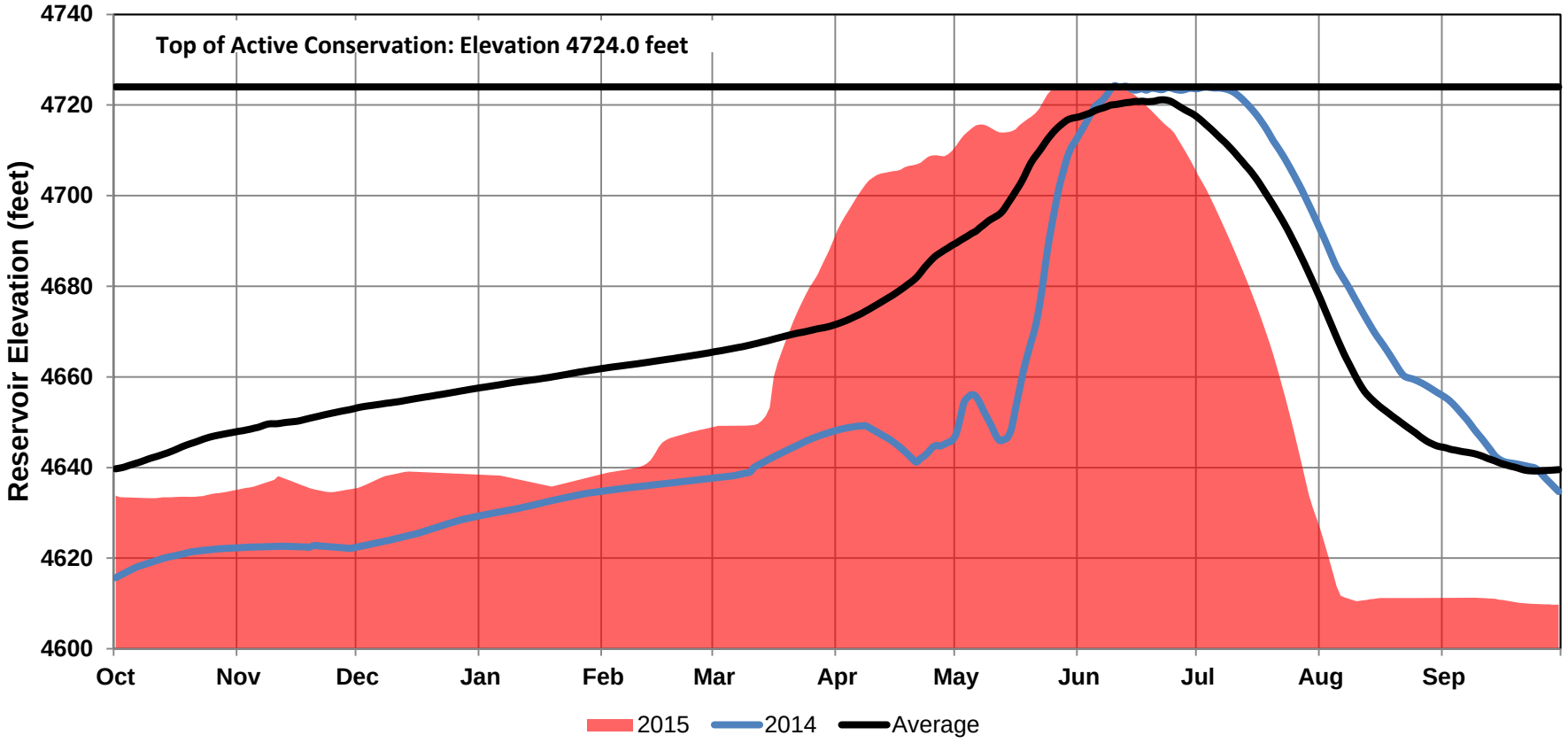


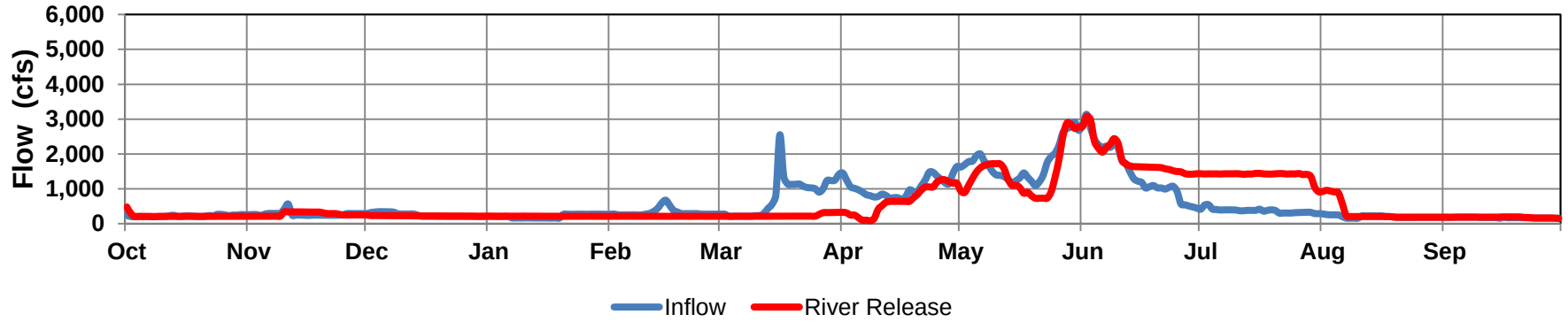
Canyon Ferry Reservoir Operations



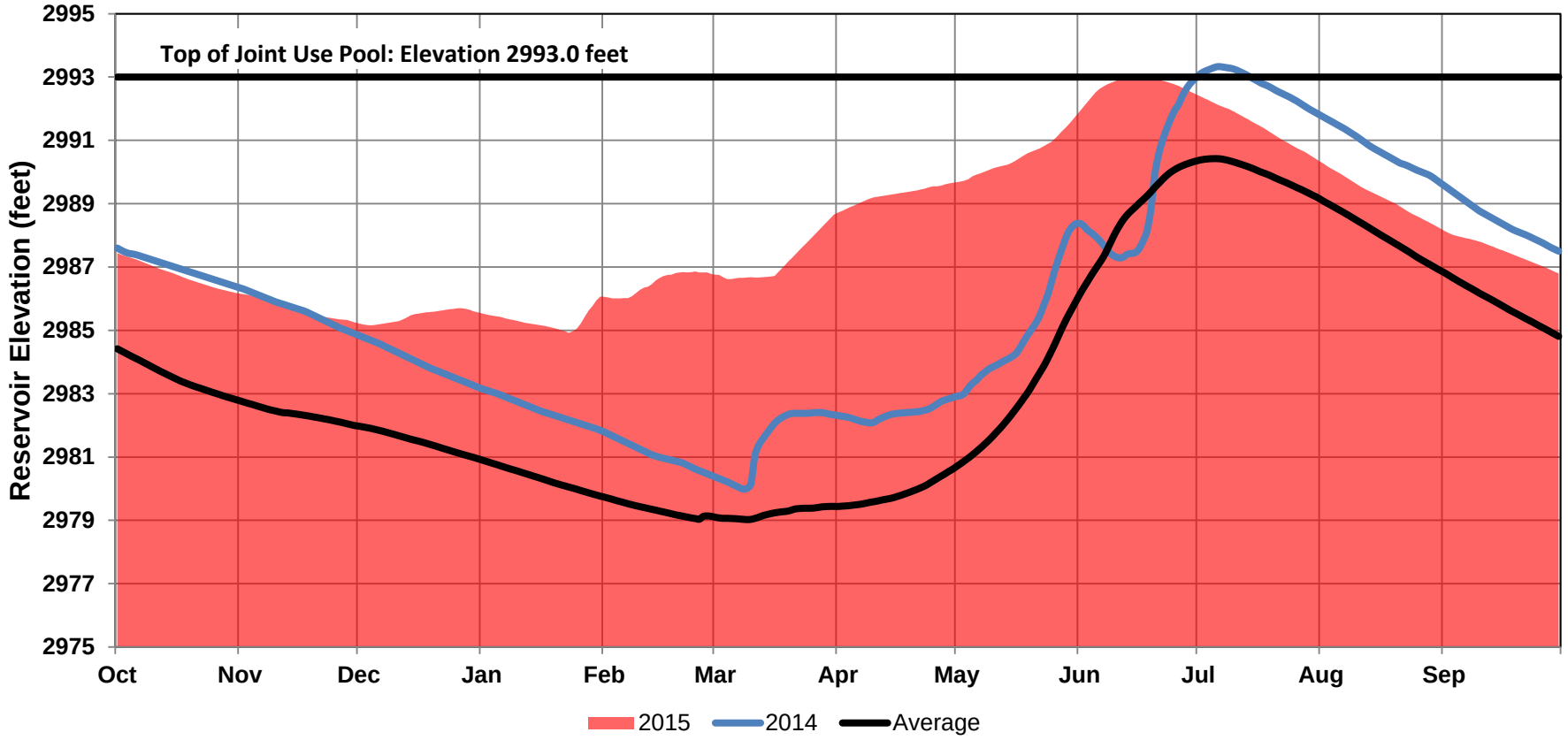


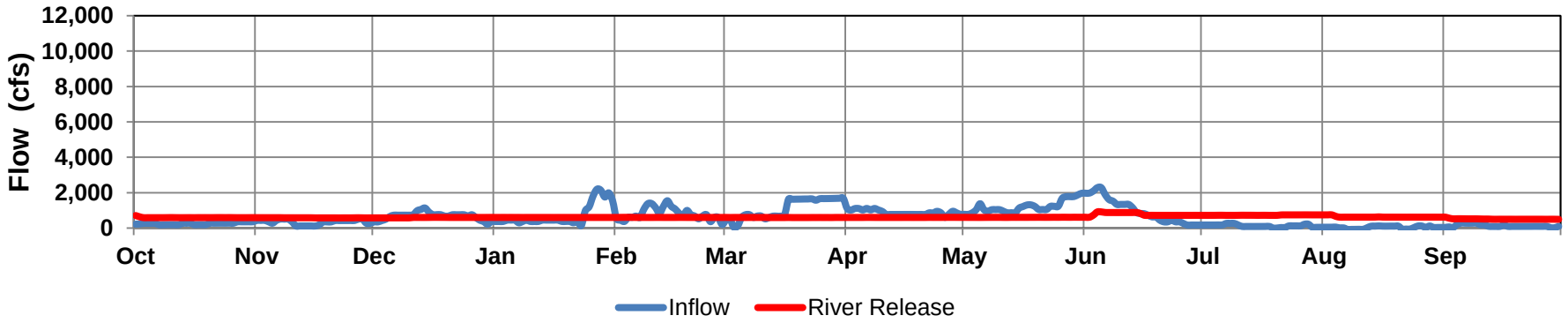
Gibson Reservoir Operations



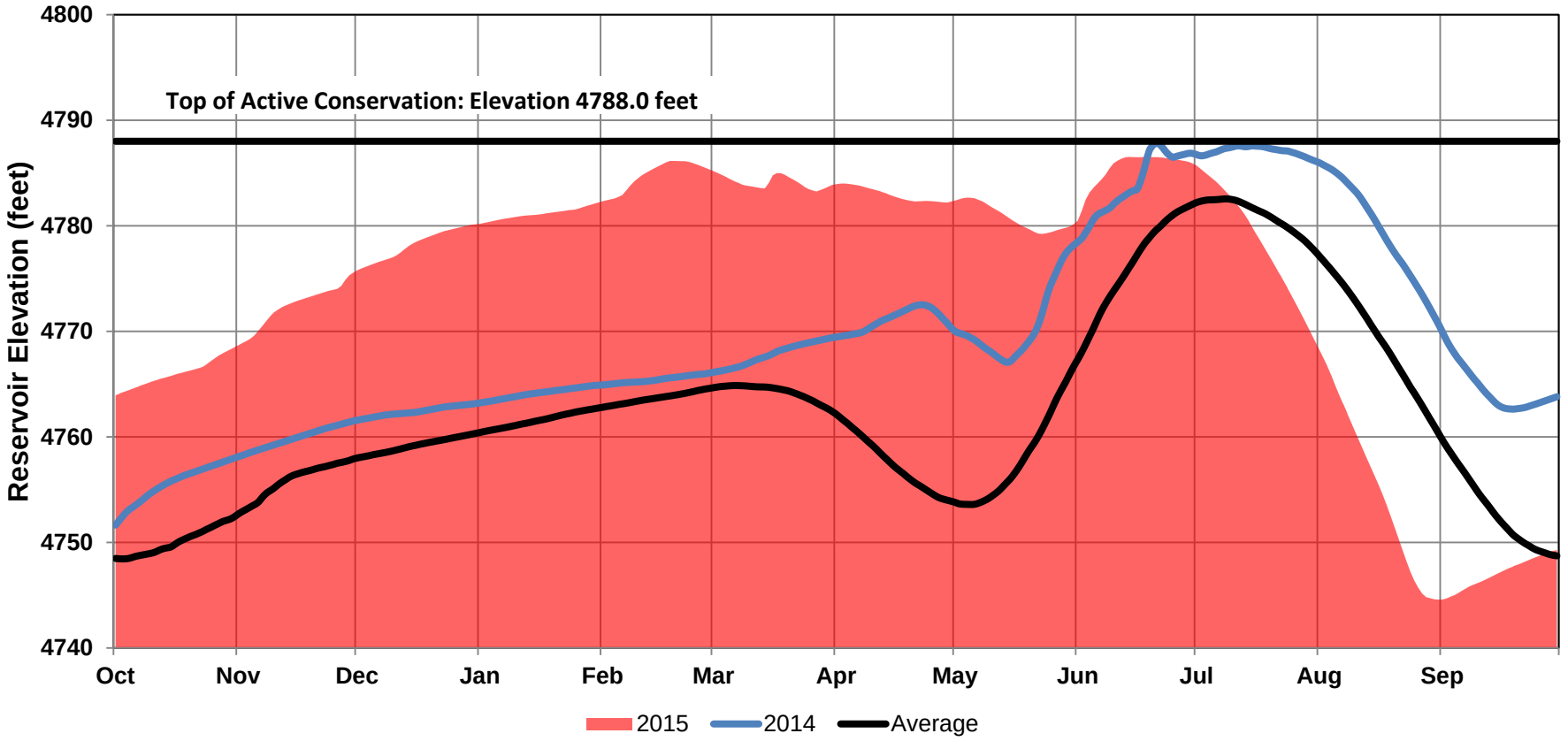


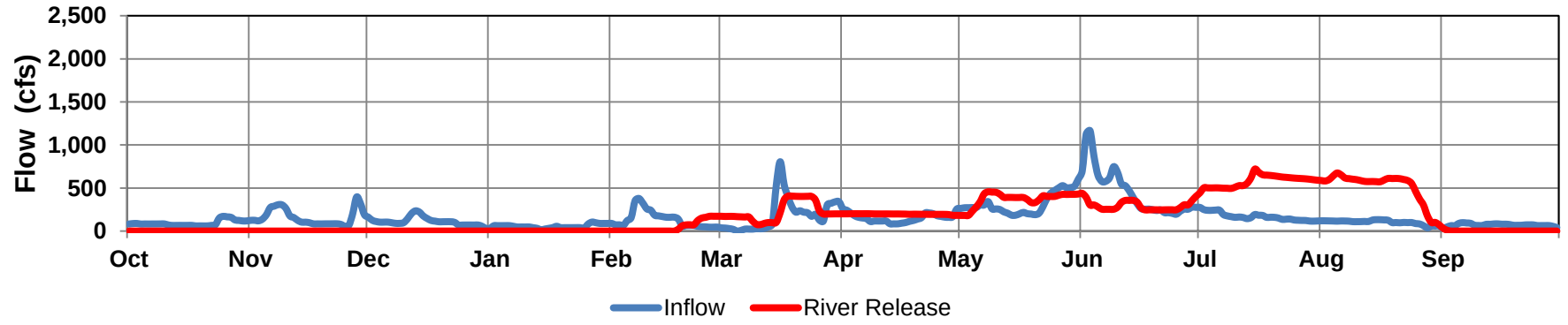
Lake Elwell (Tiber Dam) Operations



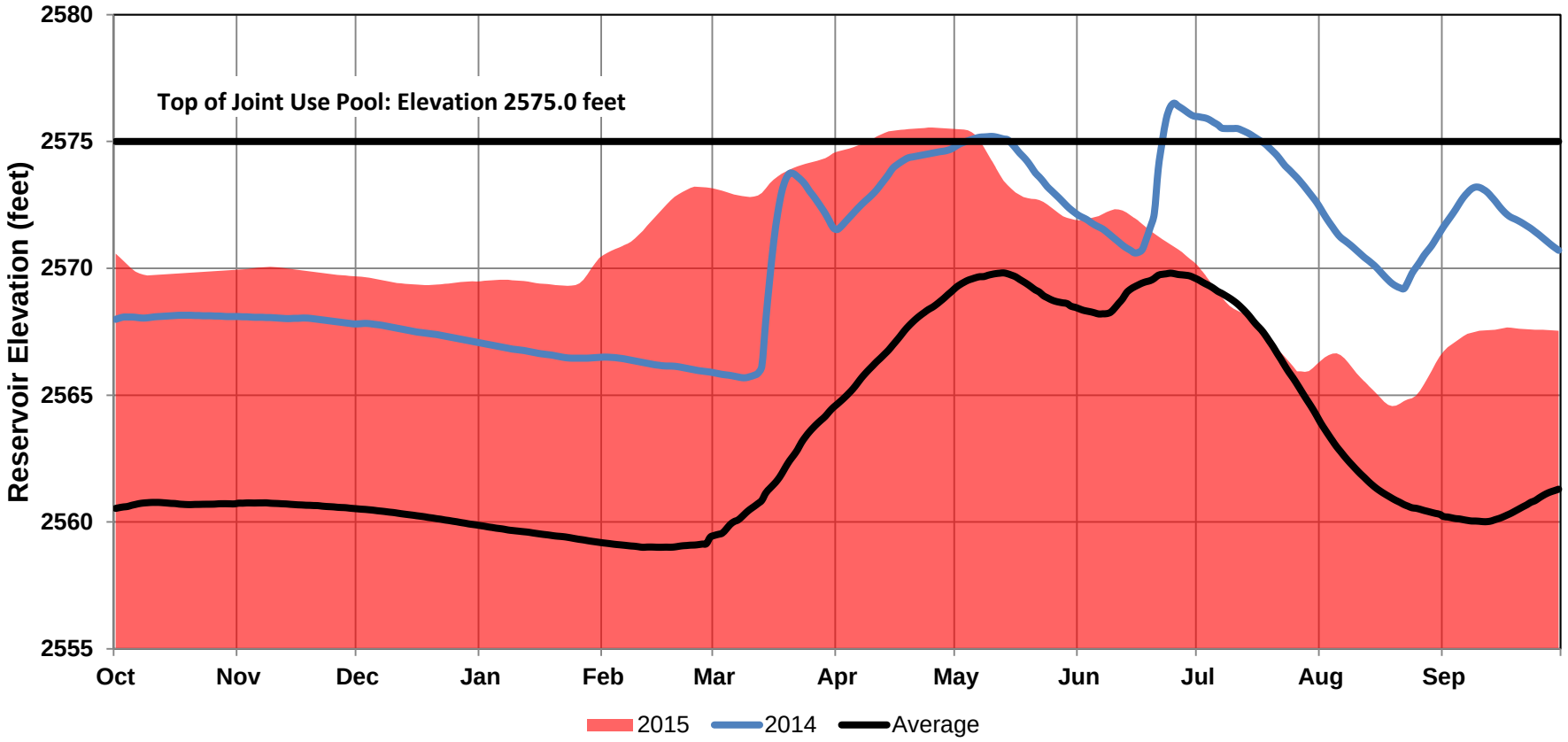


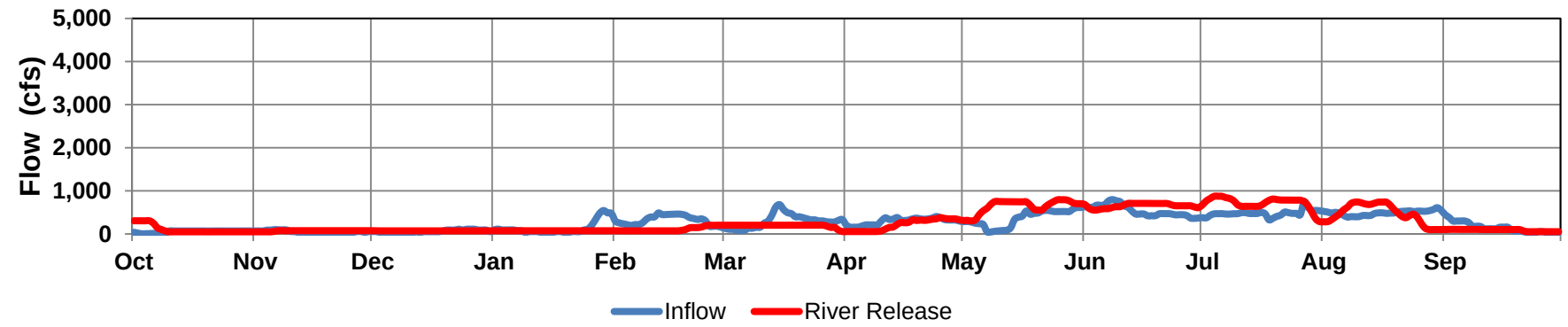
Lake Sherburne Operations



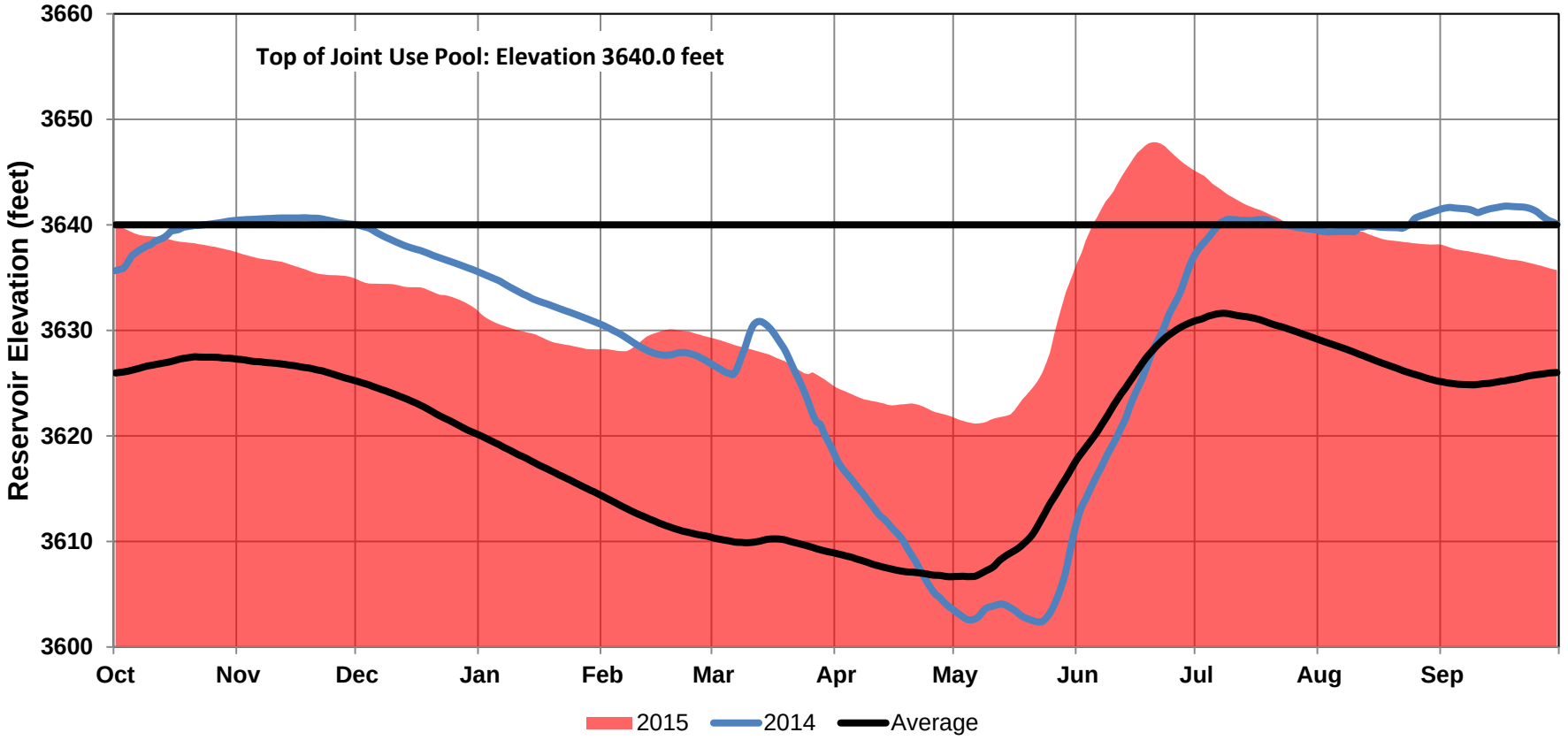


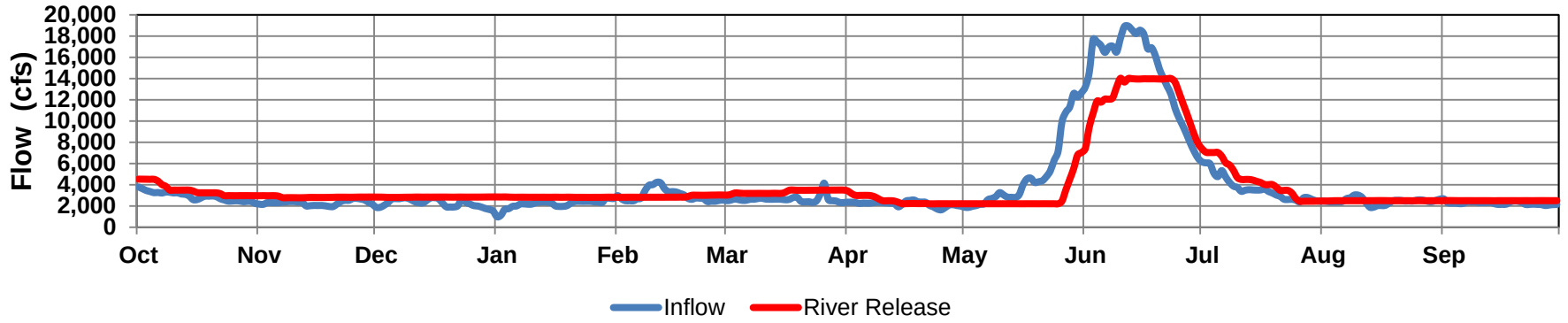
Fresno Reservoir Operations





Bighorn Lake (Yellowtail Dam) Operations





Summary of Conditions

- Inflows continue to be below average
- Planned Fall / Winter Releases
  - Clark Canyon Reservoir – 30 cfs
  - Canyon Ferry – 3,400 cfs below Holter Dam
  - Sun River Diversion – 75 cfs to 100 cfs
  - Tiber Reservoir – 500 cfs
  - Fresno Reservoir – 50 cfs
  - Yellowtail Dam & Reservoir – TBD (Nov. 5th)

Reclamation's Internet Website

http://www.usbr.gov/gp/hydromet/

- near real-time data available through the HYDROMET data system
- summaries and plots of historical data
- annual reservoir operating plan publication
- monthly water supply reports
- project data
- snow plots
- links to related internet sites

Montana Climate Office

COLLEGE OF FORESTRY & CONSERVATION

MONTANA STATE UNIVERSITY EXTENSION

MT Drought and Water Supply Committee
October 15, 2015

Kelsey Jensco
State Climatologist

Ashley Ballentyne
Asst. State Climatologist

Michael Sweet
Information Services

Nick Silverman
Research Scientist

MONTANA CLIMATE OFFICE

1. Our goal is to provide all Montanans with high-quality, timely, relevant, and scientifically-based climate information.

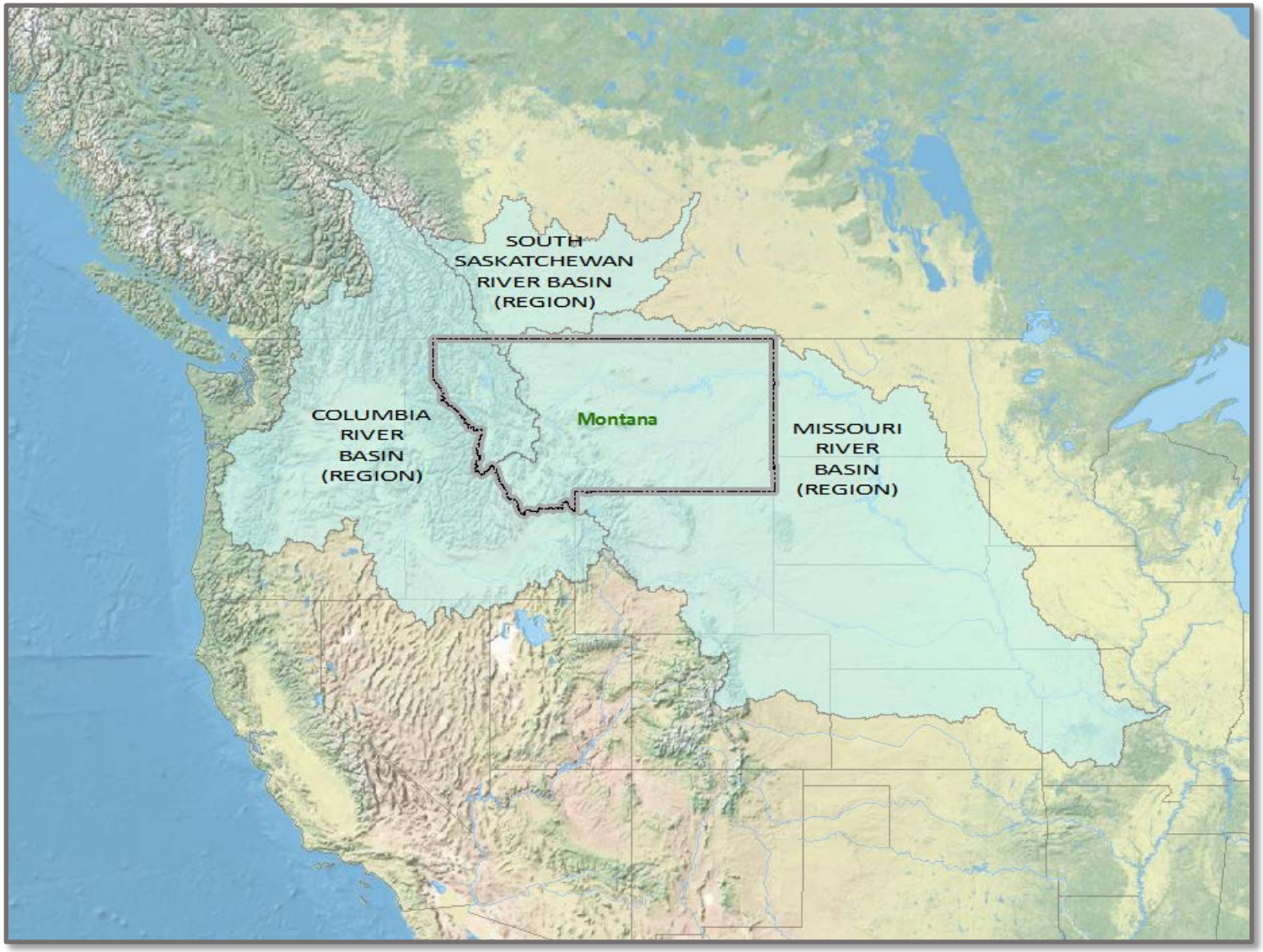
2. The MCO also assists stakeholders in interpreting climate information or adapting climate products to their needs.

3. The Montana Climate Office (MCO) is an independent state-designated body.
   - Housed under the Montana Forest Conservation Experiment Station
   - Official member of the AASC
   - State Library (2013) designated the MCO as the official steward of climate information for Montana.

A MONTANA FRAMEWORK

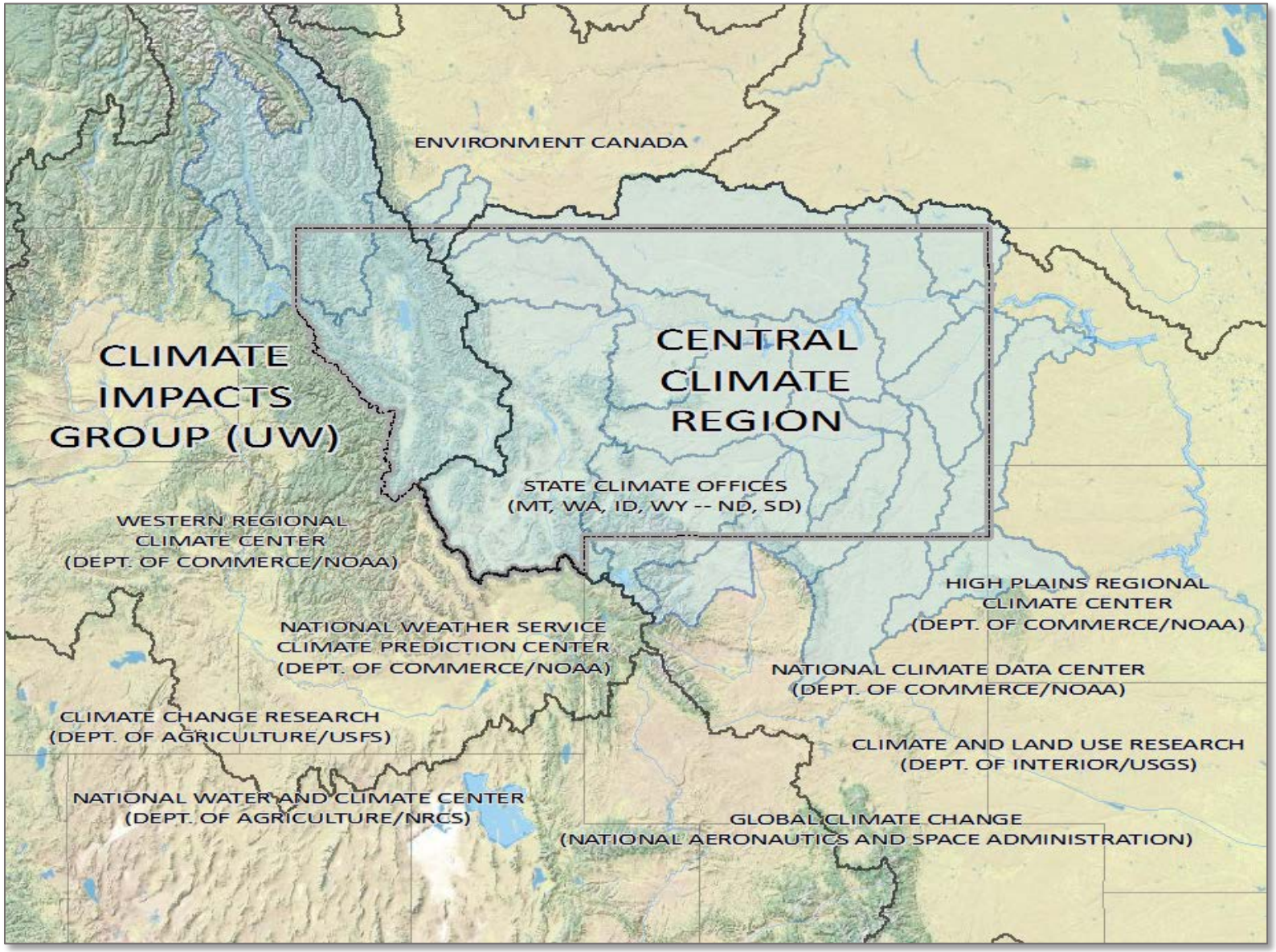
"A Montana Framework Data Layer is a State recognized, commonly needed and digitally formatted representation of land information features, natural and cultural that are **coordinated, developed, integrated, maintained, and distributed** through a community based effort over the geographic area of Montana and are, in the determination of the Montana Land Information Advisory Council and the Geographic Information Officer, significant to a broad variety of users within Montana and the Nation."

MONTANA AT THE HEADWATERS



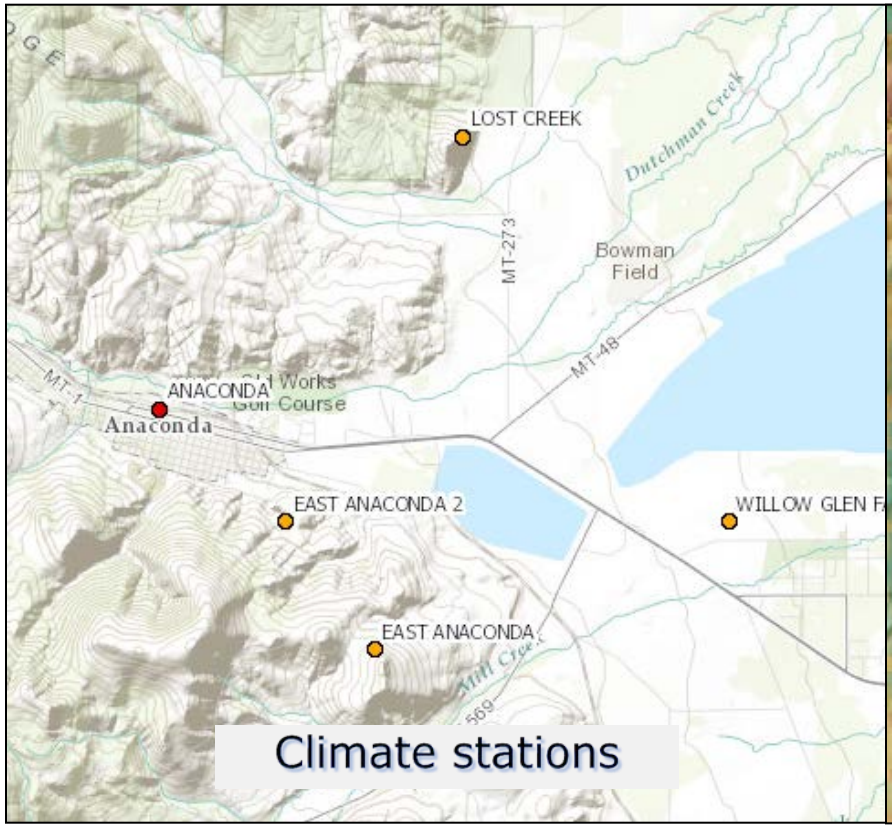
"Geographic Area of Interest"

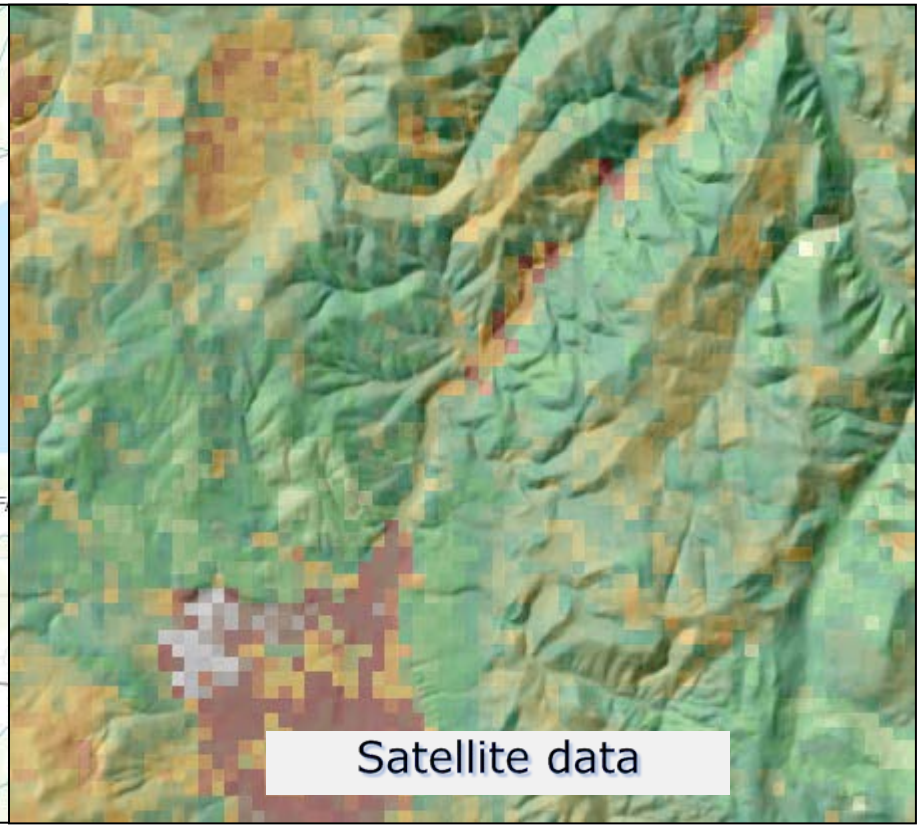
MONTANA AT THE HEADWATERS



"Coordination"

Statewide science-based climate information with two primary data types – point and raster (gridded) data

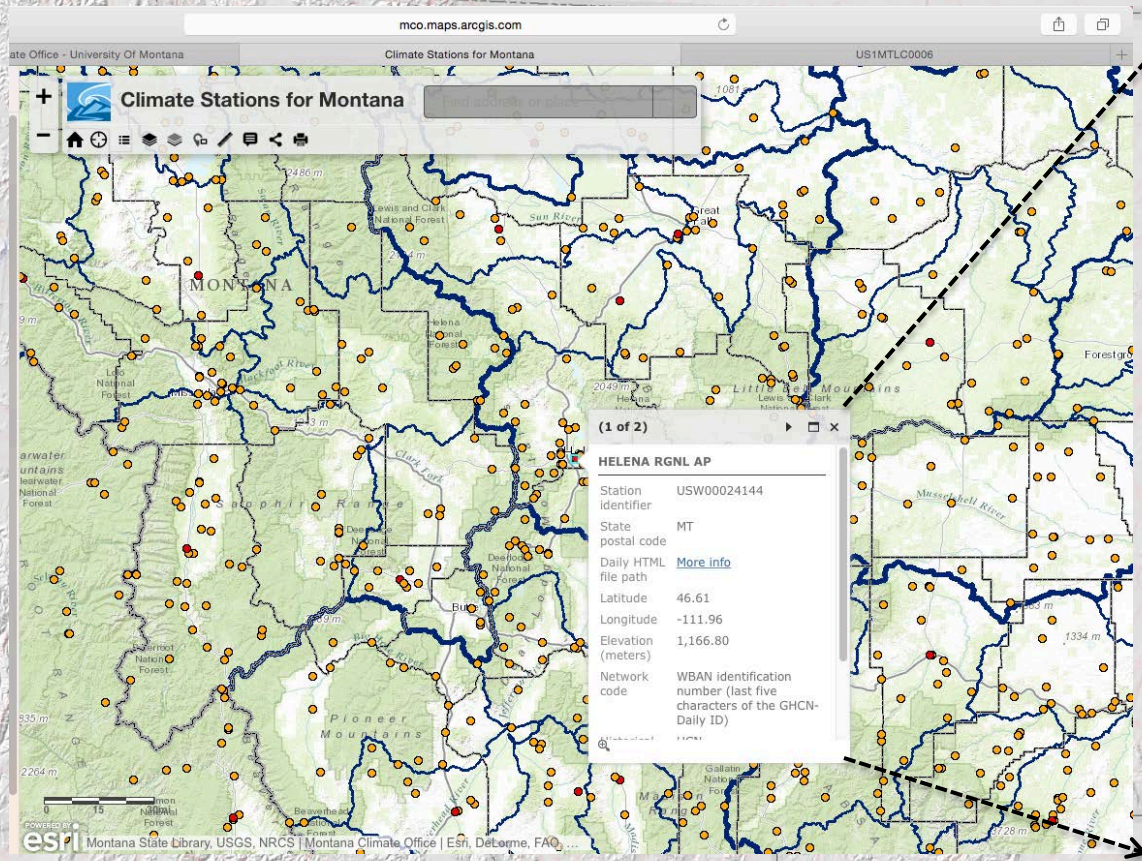




"Developed, Integrated, and Maintained"

Temperature, humidity, precipitation, snow water equivalent and snow depth

Over 23-million records of observation

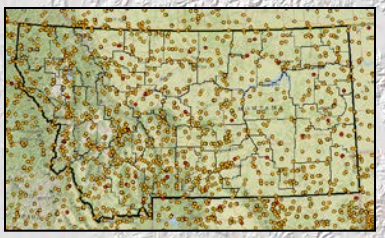


Montana Climate Office

(download measurement data for this station in CSV format)

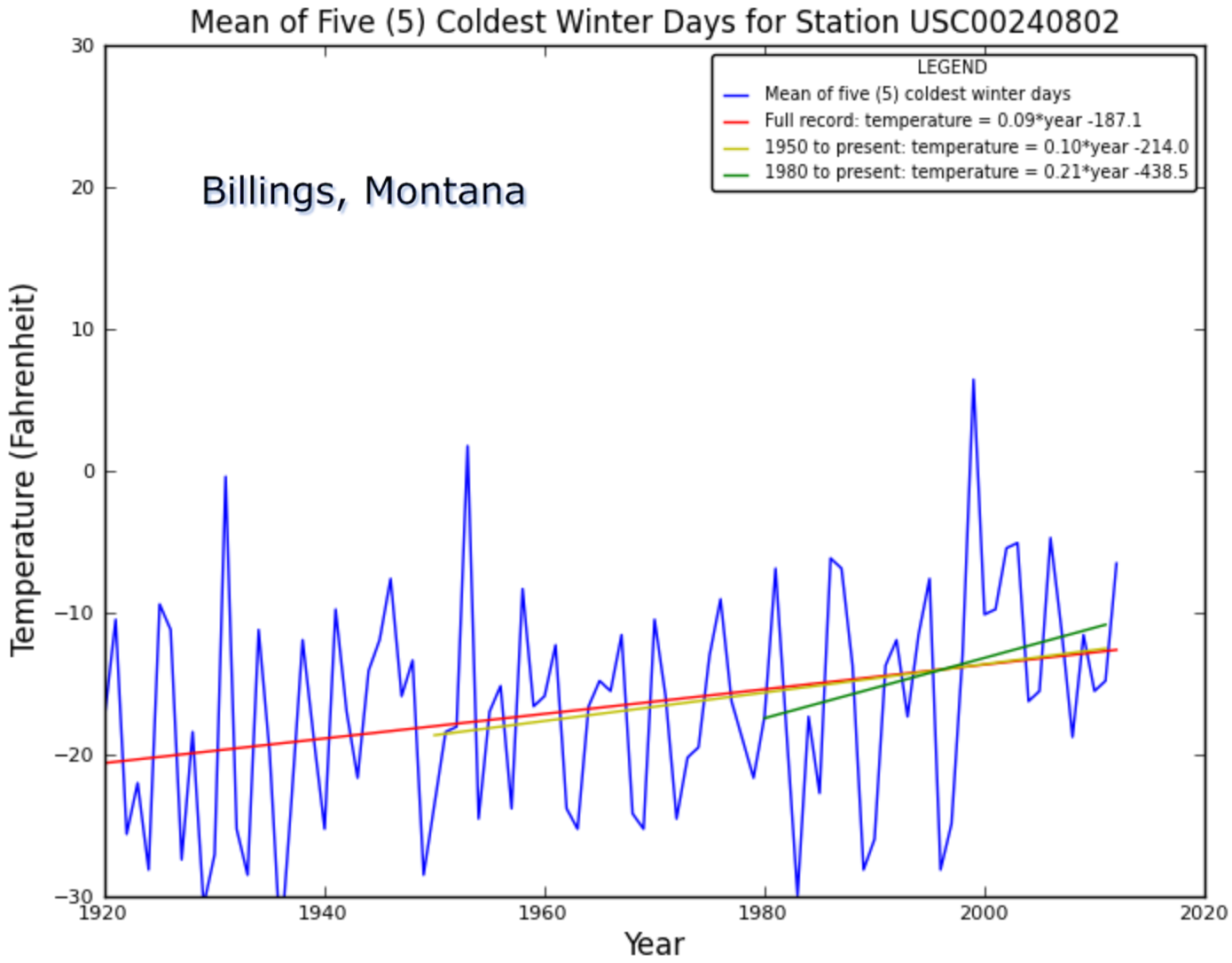
Station Details (view location map in new window)	
Station Name:	HELENA RGNL AP, MT USA
Station ID:	USW00024144
Lat/Long:[2]	46.6056°,-111.9636°
Elevation:	3,828 feet; 1166.8 meters
Network:	W:WBAN identification number (last five characters of the GHCN-Daily ID)

Element	Start	End	Years	Observations	Coverage[3]
ACMH:Average cloudiness midnight to midnight from manual observations (percent)	1965-1-1	1990-4-15	25	8,523	92%
ACSH:Average cloudiness sunrise to sunset from manual observations (percent)	1965-1-1	1994-10-31	29	10,823	99%
AWND:Average daily wind speed (tenths of meters per second)	1984-1-1	2015-10-6	31	11,596	99%
FMTM:Time of fastest mile or fastest 1-minute wind (hours and minutes i.e. HHMM)	1984-1-1	2012-7-31	28	10,171	97%
PGTM:Peak gust time (hours and minutes i.e. HHMM)	1958-1-15	2015-9-29	57	13,742	65%
PRCP:Precipitation (tenths of mm)	1938-4-1	2015-10-6	77	28,272	99%
PSUN:Daily percent of possible sunshine (percent)	1965-1-1	1983-12-31	18	6,939	100%
SNOW:Snowfall (mm)	1939-5-1	2015-10-6	76	24,896	89%
SNWD:Snow depth (mm)	1939-2-1	2015-10-6	76	25,114	89%
TAVG:	1998-4-1	2015-10-8	17	3,586	56%
TMAX:Maximum temperature (tenths of degrees C)	1938-5-1	2015-10-6	77	28,281	99%
TMIN:Minimum temperature (tenths of degrees C)	1938-4-1	2015-10-6	77	28,311	99%
TSUN:Daily total sunshine (minutes)	1965-1-1	2005-6-8	40	12,457	84%
WDF1:Direction of fastest 1-minute wind (degrees)	1984-1-13	1994-6-24	10	9	0%
WDF2:Direction of fastest 2-minute wind (degrees)	1994-11-1	2015-10-6	21	7,634	99%
WDF5:Direction of fastest 5-second wind (degrees)	1994-11-1	2015-10-6	21	7,627	99%
WDFG:Direction of peak wind gust (degrees)	1958-1-15	1994-10-31	36	8,390	62%
WDFM:Fastest mile wind direction (degrees)	1965-1-1	1994-10-31	29	10,880	99%
WESD:Water equivalent of snow on the ground (tenths of mm)	1952-11-16	2010-12-31	58	7,792	36%
WSF1:Fastest 1-minute wind speed (tenths of meters per second)	1984-1-13	1994-6-24	10	10	0%
WSF2:Fastest 2-minute wind speed (tenths of meters per second)	1994-11-1	2015-10-6	21	7,636	99%
WSF5:Fastest 5-second wind speed (tenths of meters per second)	1994-11-1	2015-10-6	21	7,630	99%
WSFG:Peak guest wind speed (tenths of meters per second)	1958-1-15	1994-10-31	36	8,395	62%
WSFM:Fastest mile wind speed (tenths of meters per second)	1965-1-1	1994-10-31	29	10,880	99%
WT01:Weather Type fog or ice fog or freezing fog (may include heavy fog)	1948-1-7	2015-10-5	67	2,541	10%
WT02:Weather Type heavy fog or heaving freezing fog (not always distinguished from fog)	1965-1-5	2015-10-5	50	523	2%
WT03:Weather Type thunder	1940-5-2	2015-9-17	75	2,376	8%
WT04:Weather Type ice pellets or sleet or snow pellets or small hail	1946-5-13	1999-12-21	53	56	0%
WT05:Weather Type hail (may include small hail)	1948-6-30	2010-12-14	62	391	1%
WT06:Weather Type glaze or rime	1950-1-19	2015-1-18	65	83	0%
WT07:Weather Type dust or volcanic ash or blowing dust or blowing sand or blowing obstruction	1948-9-15	2010-12-31	62	105	0%
WT08:Weather Type smoke or haze	1948-12-29	2015-9-16	67	1,080	4%
WT09:Weather Type blowing or drifting snow	1948-2-4	2010-12-25	62	133	0%
WT10:Weather Type tornado or waterspout or funnel cloud	1993-5-29	1993-6-11	0	2	15%
WT11:Weather Type high or damaging winds	1989-4-25	2012-7-22	23	53	0%
WT12:Weather Type blowing spray	1987-7-28	1988-6-13	1	2	0%
WT13:Weather Type mist	1996-8-18	2013-3-23	17	1,136	18%



"Developed, Integrated, and Maintained"

A CONTEXT FOR CHANGE ANALYSIS



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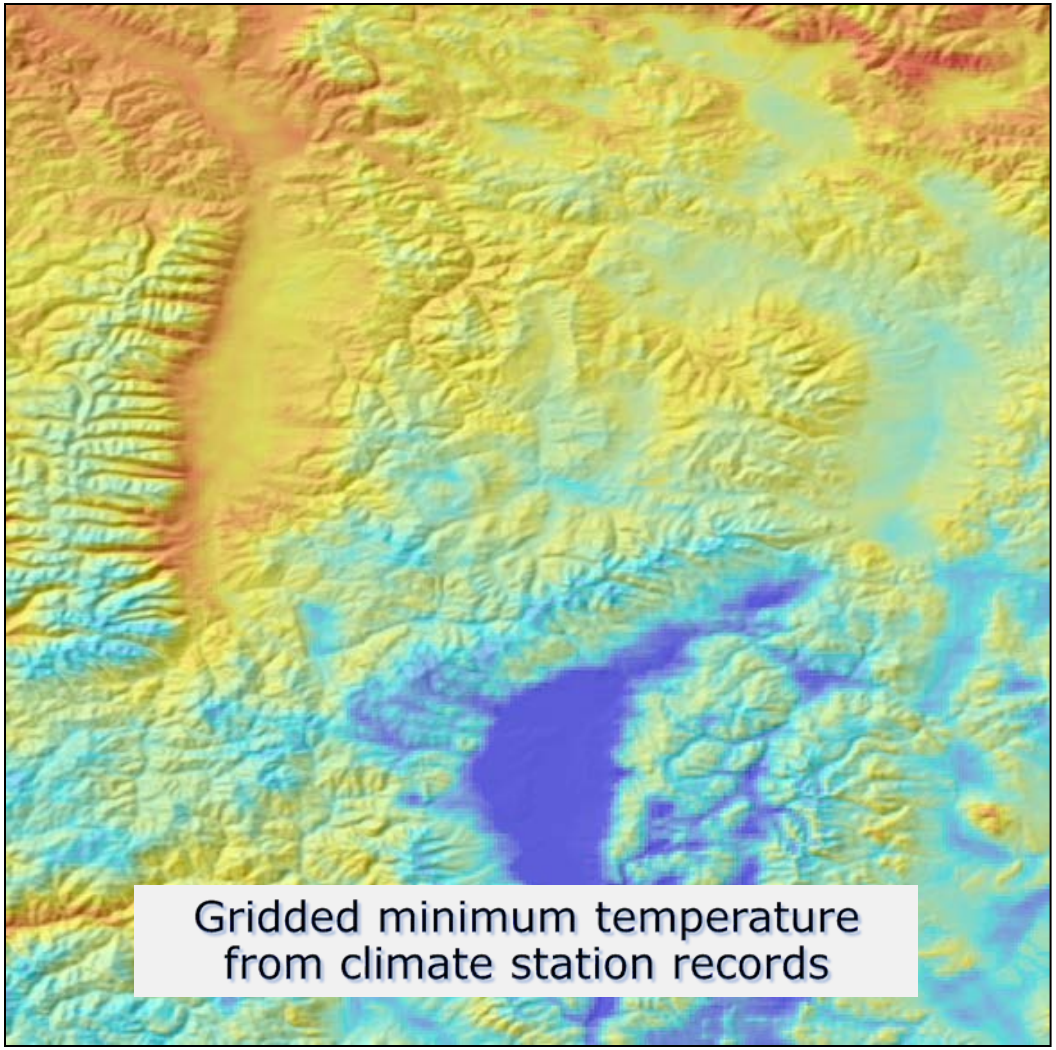
GRIDDED (RASTER) DATA



- Daily statewide products for temperature and precipitation
- measures of quality and uncertainty from 1948-2012.

Oyler, J. W., Ballantyne, A., Jencso, K., Sweet, M. and Running, S. W. (2014), Creating a topoclimatic daily air temperature dataset for the conterminous United States using homogenized station data and remotely sensed land skin temperature. Int. J. Climatol. http://dx.doi.org/10.1002/joc.4127.

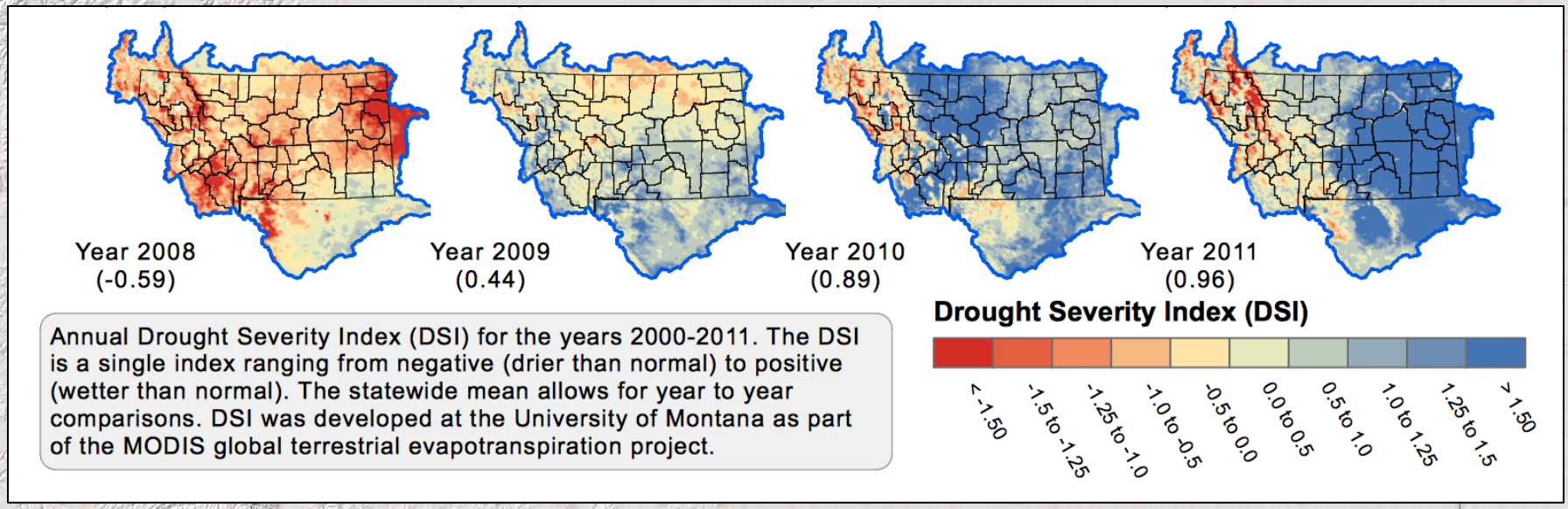
NASA GRIDDED SATELLITE DATA

Products include common satellite-based terrestrial products:

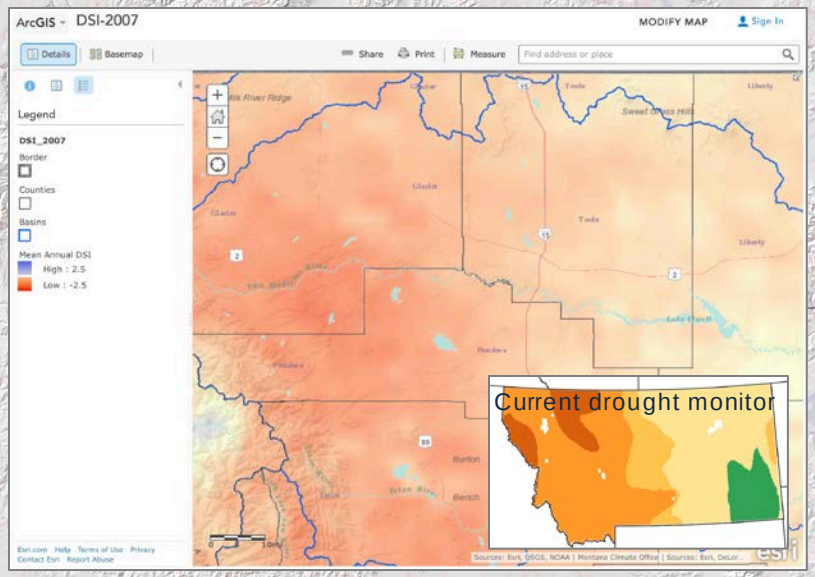
- Normalized Difference Vegetation Index (**NDVI**)
- Enhanced Vegetation Index (**EVI**)
- Evapotranspiration (**ET**) as a measure of evaporation from the ground or vegetated surfaces combined with plant transpiration.
- A drought severity index (**DSI**) as a relative measure of soil wetness.

"Developed, Integrated, and Maintained"

Satellite Drought Detection



Annual Drought Severity Index (DSI) for the years 2000-2011. The DSI is a single index ranging from negative (drier than normal) to positive (wetter than normal). The statewide mean allows for year to year comparisons. DSI was developed at the University of Montana as part of the MODIS global terrestrial evapotranspiration project.

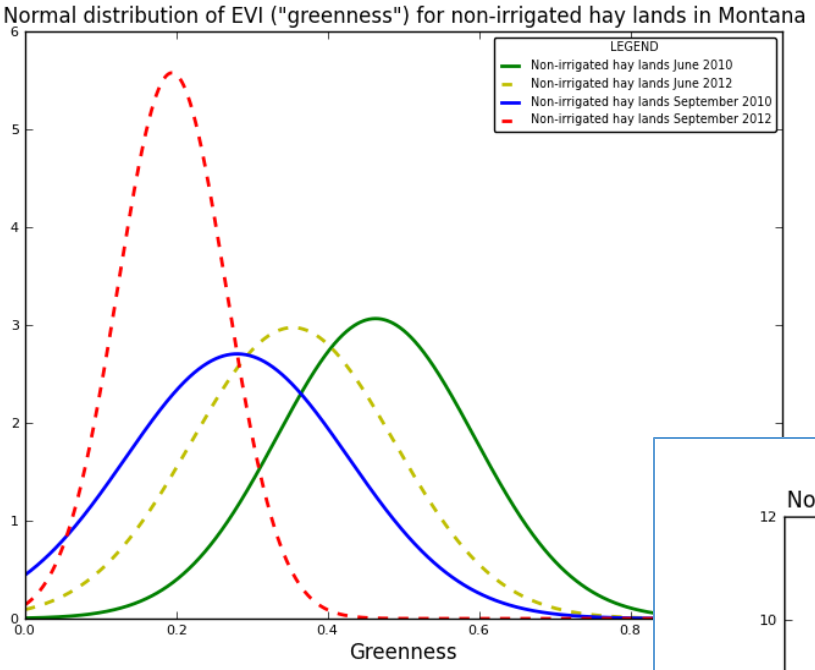


http://arcg.is/1QM1Dsw

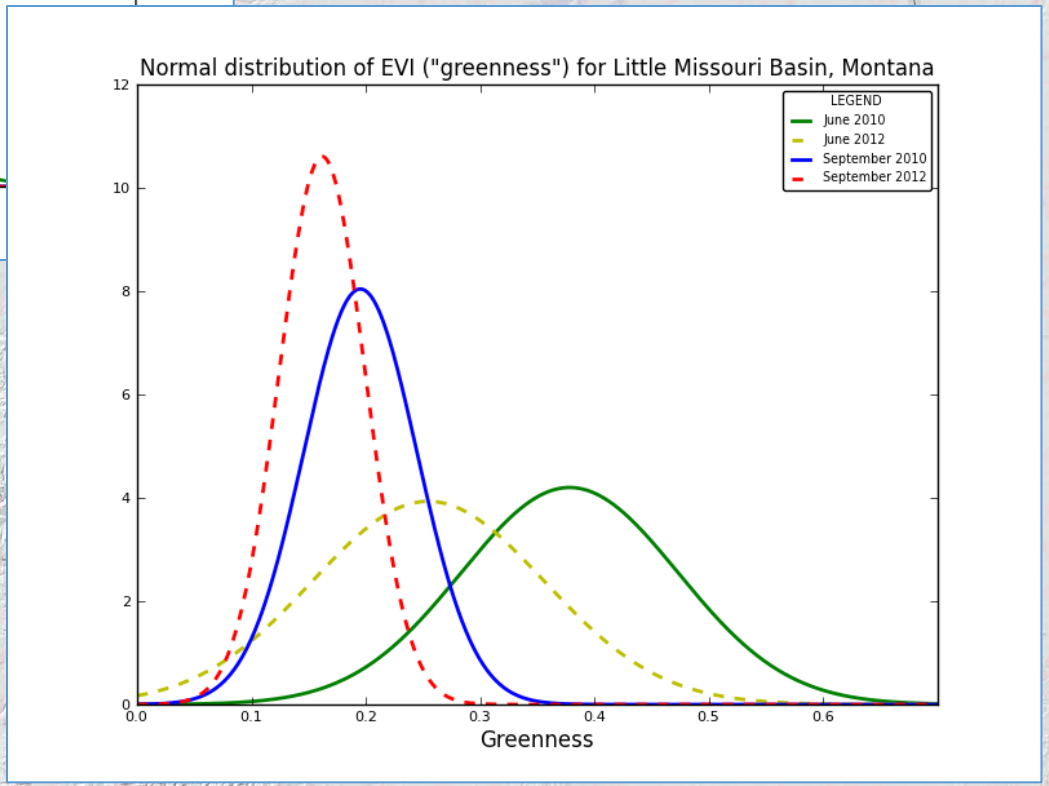
Operational Drought Product?

- Interactive
- Every 6 days
- 1km resolution

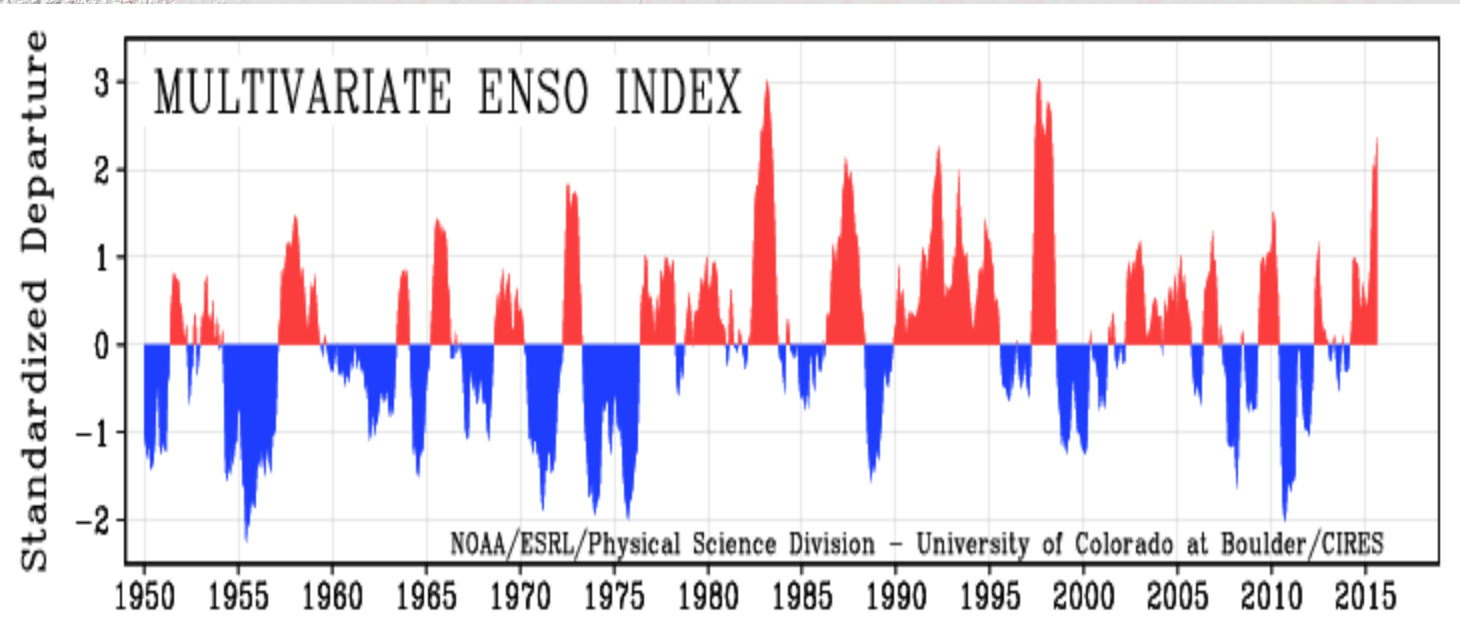
Qiaozhen Mu, Maosheng Zhao, John S. Kimball, Nathan G. McDowell, and Steven W. Running, 2013: A Remotely Sensed Global Terrestrial Drought Severity Index. *Bull. Amer. Meteor. Soc.*, **94**, 83–98. doi: http://dx.doi.org/10.1175/BAMS-D-11-00213.1



Distribution of greenness, evapotranspiration and drought values allow us to compare and characterize croplands and vegetation between different time periods.



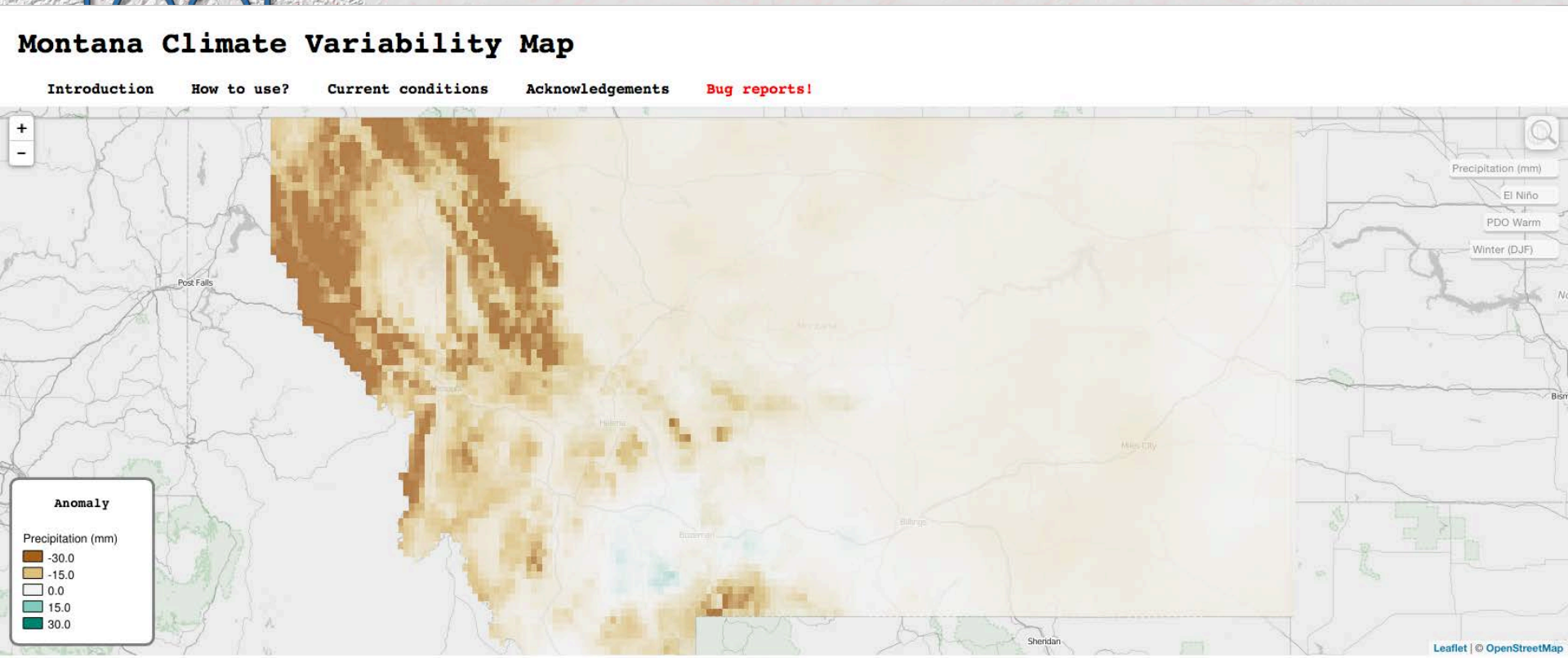
Distribution of greenness, evapotranspiration, and drought values allows us to compare and characterize watersheds between different time periods.



- **El Nino** => warm and dry; **La Nina** => cool and wet.
- Most accurate measurement of ENSO is the Multivariate ENSO Index (MEI).

- Takes into consideration the spatial patterns of 6 different variables over the tropical Pacific: (1) **sea-level pressure**, (2) **zonal wind speed** (3) **meridional wind speed**, (3) **sea surface temp.**, (4) **air temp.**, and (6) **cloudiness**.

MT CLIMATE VARIABILITY WEB TOOL



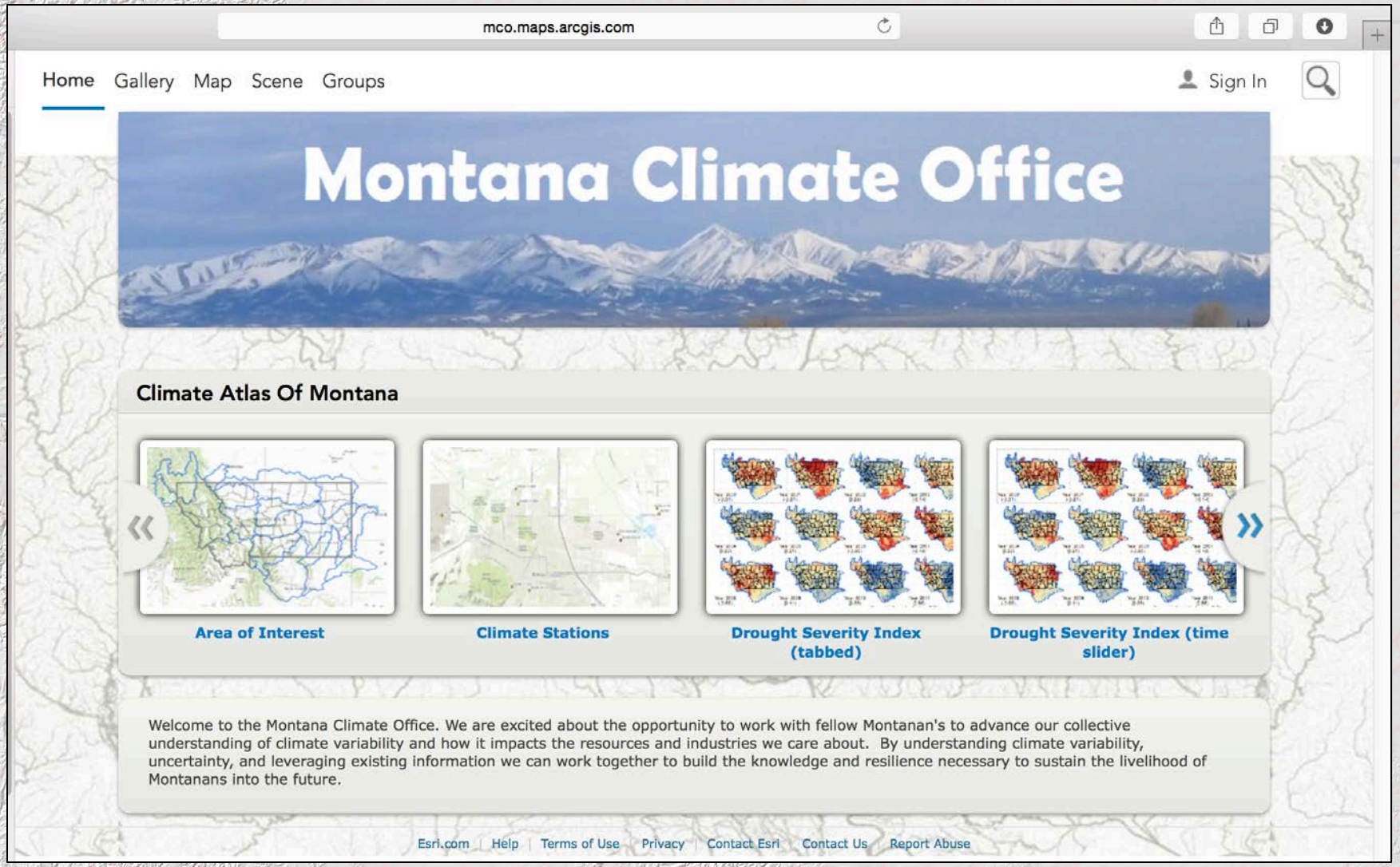
MONTANA STATE UNIVERSITY
Montana Agricultural Experiment Station

Adaptive Hydrology

Montana Climate Office

"Developed, Integrated, and Maintained"

MONTANA CLIMATE ATLAS



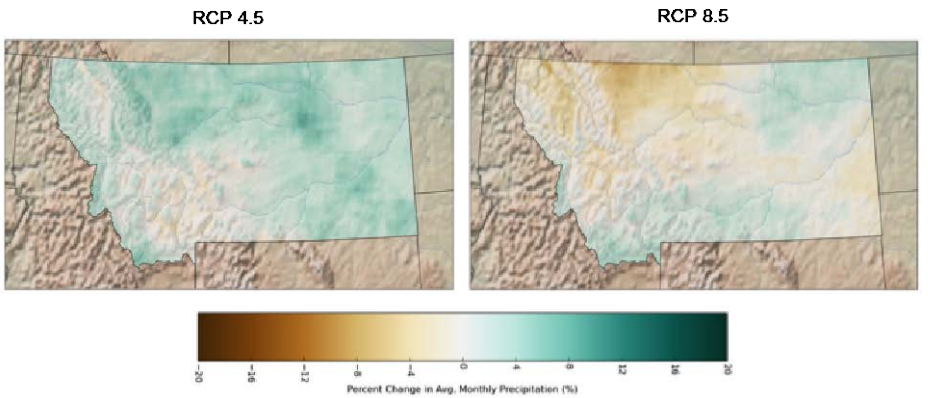
"Distributed"

MONTANA CLIMATE ASSESSMENT

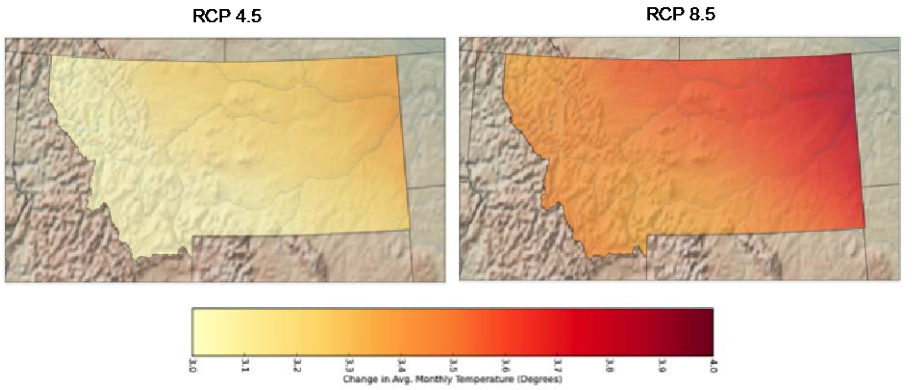
1. Develop a climate prospectus for stakeholder listening sessions
2. Historical analyses of temperature and precipitation by county and watershed across Montana
3. Evaluation of GCM downscaling methodologies and their relevance across Montana
4. Future change analysis across Montana by watershed and county

"Developed, Integrated, Maintained and Distributed"

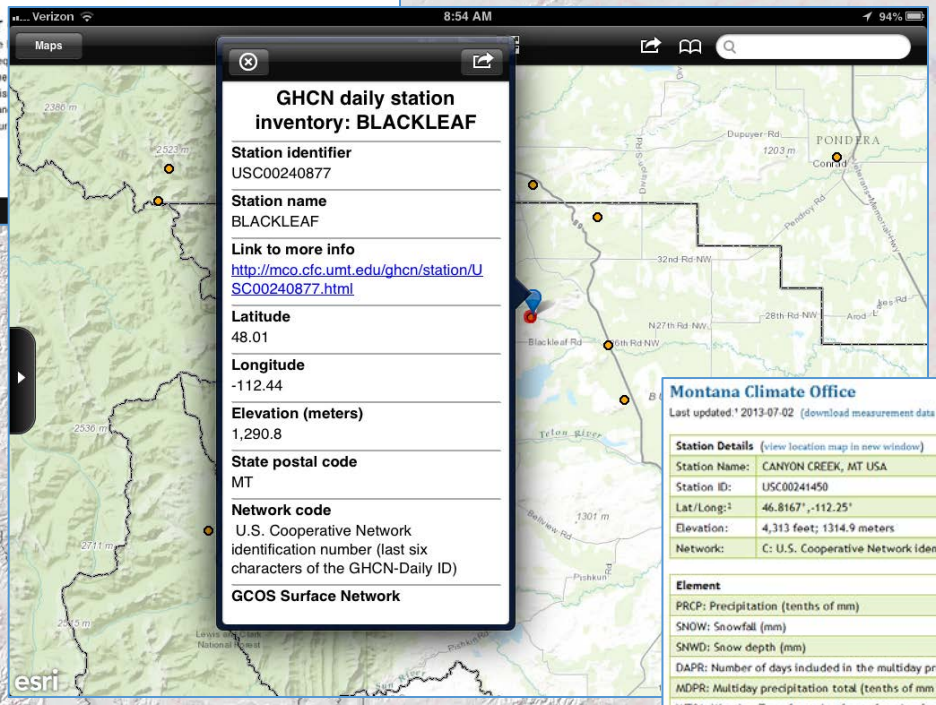
% Change in Precip. (2040–2069 vs. 1970–1999)



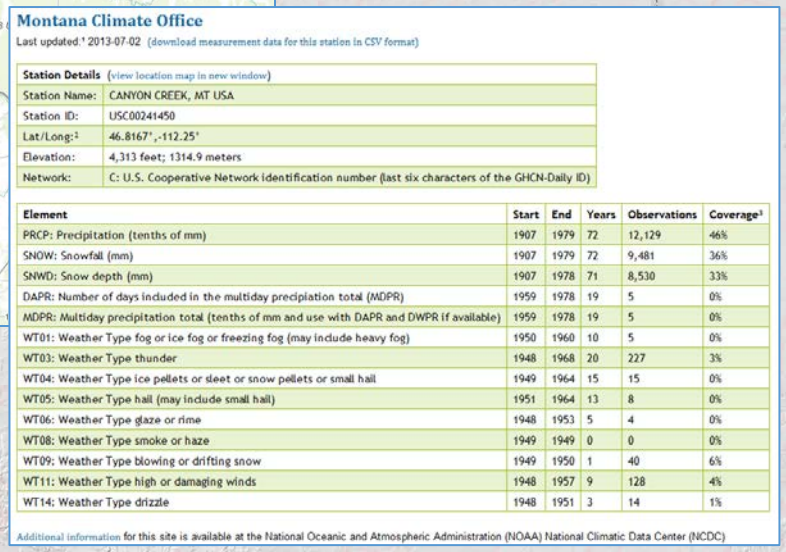
Change in Temperature (2040–2069 vs.1970–1999)



Access through MCO website, and published through the Montana State Library portal



Access via mobile devices



Montana Climate Office

Last updated: 2013-07-02 (download measurement data for this station in CSV format)

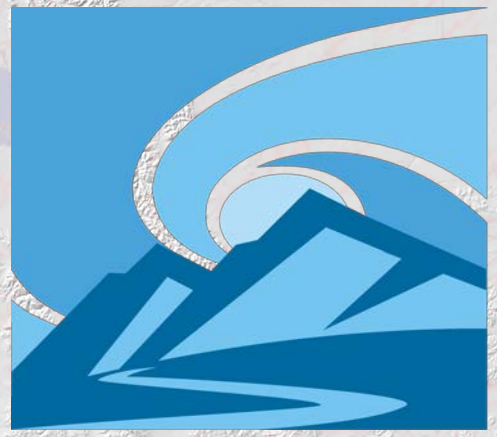
Station Details (view location map in new window)	
Station Name:	CANYON CREEK, MT USA
Station ID:	USC00241450
Lat/Long:[1]	46.8167°,-112.25°
Elevation:	4,313 feet; 1314.9 meters
Network:	C: U.S. Cooperative Network identification number (last six characters of the GHCN-Daily ID)

Element	Start	End	Years	Observations	Coverage[3]
PRCP: Precipitation (tenths of mm)	1907	1979	72	12,129	46%
SNOW: Snowfall (mm)	1907	1979	72	9,481	36%
SNWD: Snow depth (mm)	1907	1978	71	8,530	33%
DAPR: Number of days included in the multiday precipitation total (MDPR)	1959	1978	19	5	0%
MDPR: Multiday precipitation total (tenths of mm and use with DAPR and DWPR if available)	1959	1978	19	5	0%
WT01: Weather Type fog or ice fog or freezing fog (may include heavy fog)	1950	1960	10	5	0%
WT03: Weather Type thunder	1948	1968	20	227	3%
WT04: Weather Type ice pellets or sleet or snow pellets or small hail	1949	1964	15	15	0%
WT05: Weather Type hail (may include small hail)	1951	1964	13	8	0%
WT06: Weather Type glaze or rime	1948	1953	5	4	0%
WT08: Weather Type smoke or haze	1949	1949	0	0	0%
WT09: Weather Type blowing or drifting snow	1949	1950	1	40	6%
WT11: Weather Type high or damaging winds	1948	1957	9	128	4%
WT14: Weather Type drizzle	1948	1951	3	14	1%

Additional information for this site is available at the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC)

Access via direct download or through web services

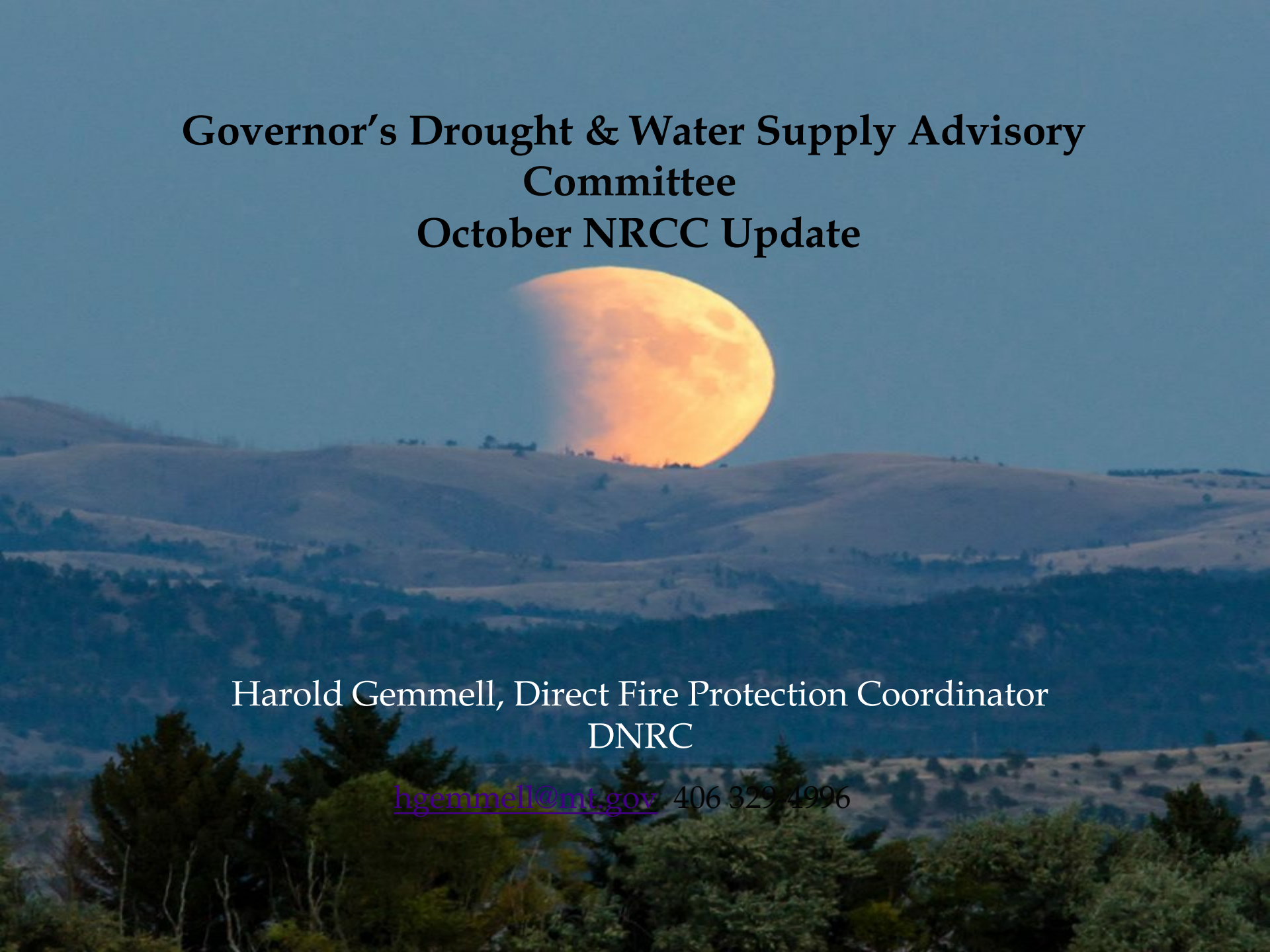
"Distributed"



Montana Climate Office

http://www.cfc.umt.edu/mco/

Governor's Drought & Water Supply Advisory Committee
October NRCC Update



Harold Gemmell, Direct Fire Protection Coordinator
DNRC

hgemmell@mt.gov 406 329 4996

Cottonwood Gulch Fire
8600 acres

Red Rock Fire
1200 Acres

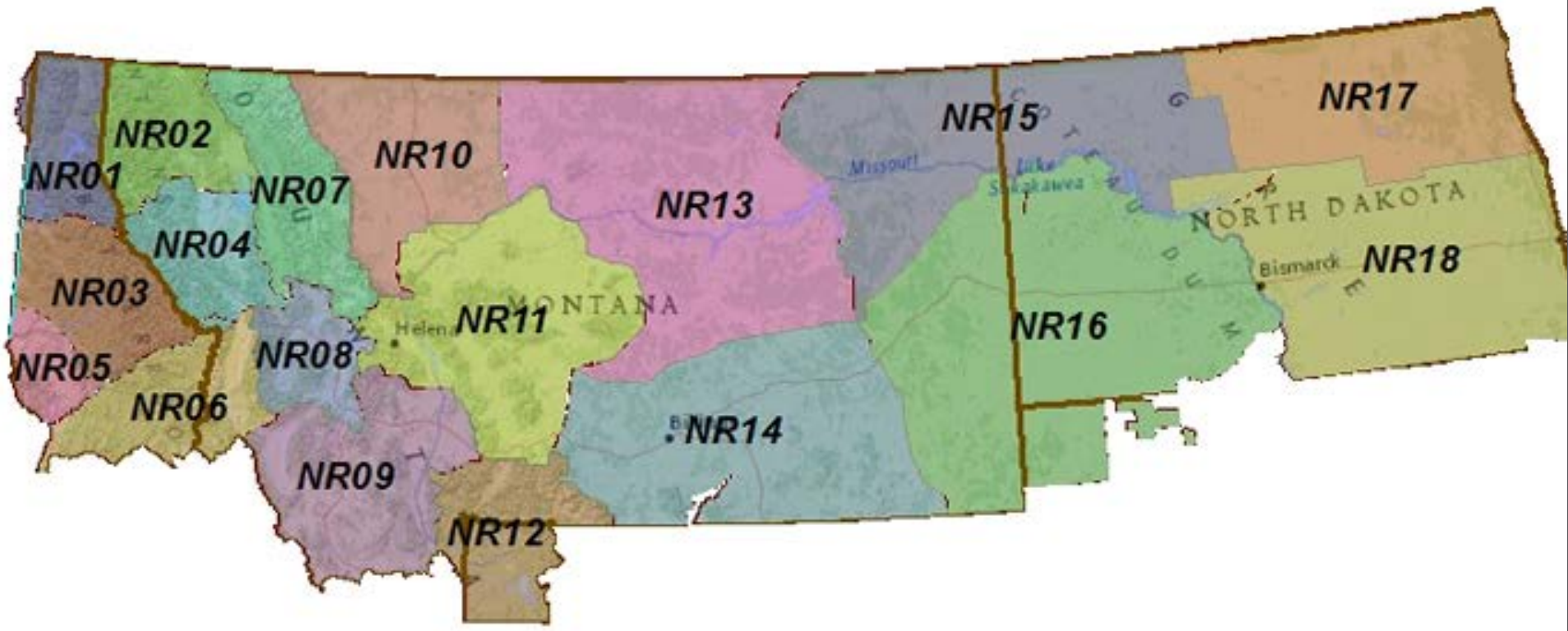
Sheep Fire
Lewis and Clark NF

Year-to-date statistics		
2015 (1/1/15 - 10/8/15)	Fires: 51,110	Acres: 11,245,536
2014 (1/1/14 - 10/8/14)	Fires: 41,707	Acres: 3,064,327
2013 (1/1/13 - 10/8/13)	Fires: 38,698	Acres: 4,136,928
2012 (1/1/12 - 10/8/12)	Fires: 49,506	Acres: 8,861,675
2011 (1/1/11 - 10/8/11)	Fires: 61,879	Acres: 8,290,670
2010 (1/1/10 - 10/8/10)	Fires: 57,419	Acres: 3,109,960
2009 (1/1/09 - 10/8/09)	Fires: 70,548	Acres: 5,667,362
2008 (1/1/08 - 10/8/08)	Fires: 70,548	Acres: 4,962,214
2007 (1/1/07 - 10/8/07)	Fires: 74,415	Acres: 8,292,604
2006 (1/1/06 - 10/8/06)	Fires: 84,578	Acres: 9,114,636
2005 (1/1/05 - 10/8/05)	Fires: 54,425	Acres: 8,186,434
Annual average prior 10 years		
2005-2014	Fires: 60,506	Acres: 6,371,381

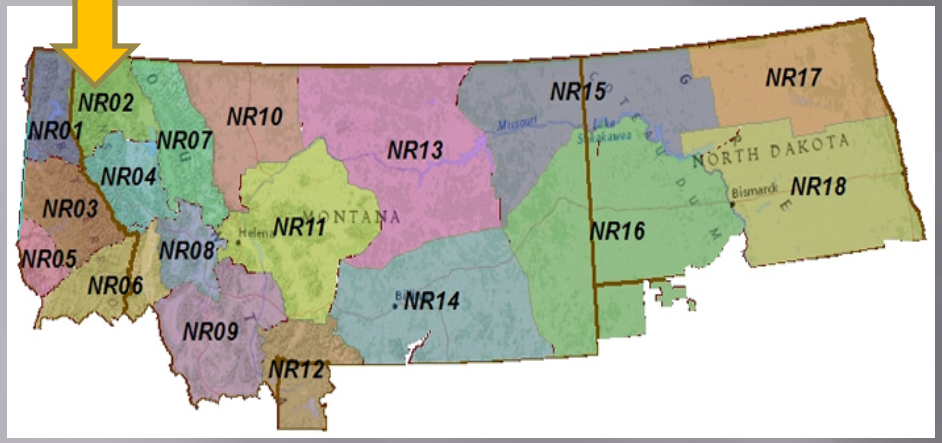
Updated: 10/14/15

		Human Caused Fires	Human Caused Acres	Lightning Caused Fires	Lightning Caused Acres	WILDFIRE TOTALS FIRES	WILDFIRE TOTALS ACRES
IDAHO							
Bureau of Indian Affairs	BIA	29	23	1	1	30	24
Bureau of Land Management	BLM	0	0	0	0	0	0
Department of Defense	DOD	0	0	0	0	0	0
U.S. Forest Service	FS	27	27	441	238,199	468	238,226
National Park Service	NPS	0	0	0	0	0	0
Idaho Department of Lands	IDS	154	4,131	120	89,847	274	93,978
		210	4,181	562	328,047	772	332,228
MONTANA							
Bureau of Indian Affairs	BIA	350	1,847	81	20,631	431	22,478
Bureau of Land Management	BLM	15	5,688	72	8,088	87	13,776
MT Counties	C&L	503	26,509	250	44,030	753	70,539
U.S. Forest Service	FS	239	2,556	462	209,683	701	212,239
U.S. Fish & Wildlife Service	FWS	0	0	1	0	1	0
National Park Service	NPS	2	4,639	16	18,877	18	23,516
Dept of Natural Resources & Conservation	MTS	208	1,598	127	1,996	335	3,594
		1,317	42,837	1,009	303,305	2,326	346,142
NORTH DAKOTA							
Bureau of Indian Affairs	BIA	506	4,119	2	2	508	4,121
Bureau of Land Management	BLM	0	0	0	0	0	0
U.S. Forest Service	FS	19	3,739	4	31	23	3,770
U.S. Fish & Wildlife Service	FWS	6	859	2	121	8	980
National Park Service	NPS	0	0	0	0	0	0
North Dakota Forest Service	NDS	12	15,927	0	0	12	15,927
		543	24,644	8	154	551	24,798

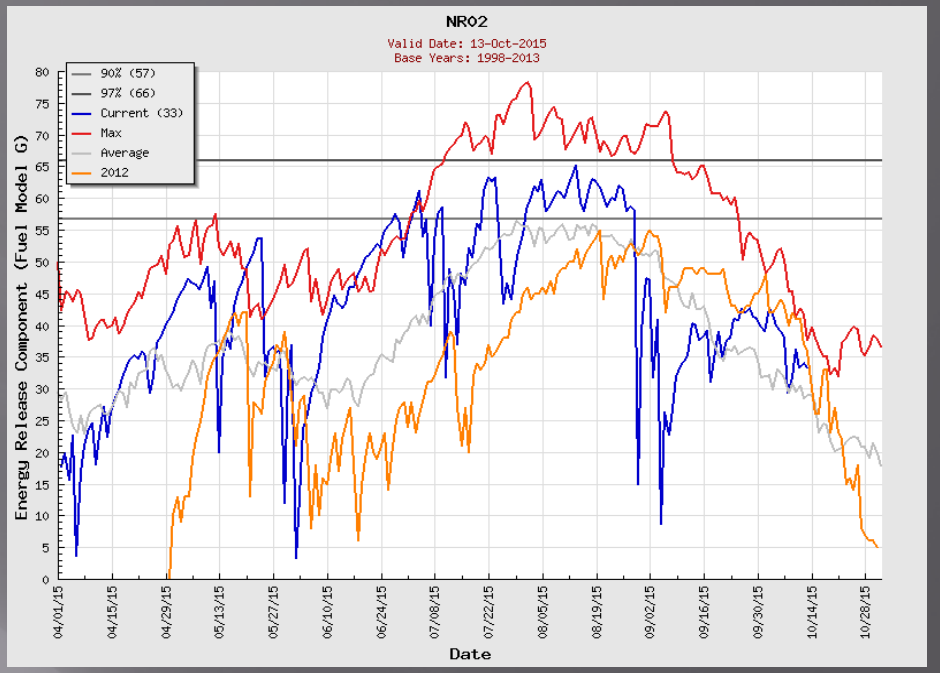
NORTHERN ROCKIES GEOGRAPHIC AREA
PREDICTIVE SERVICE AREAS

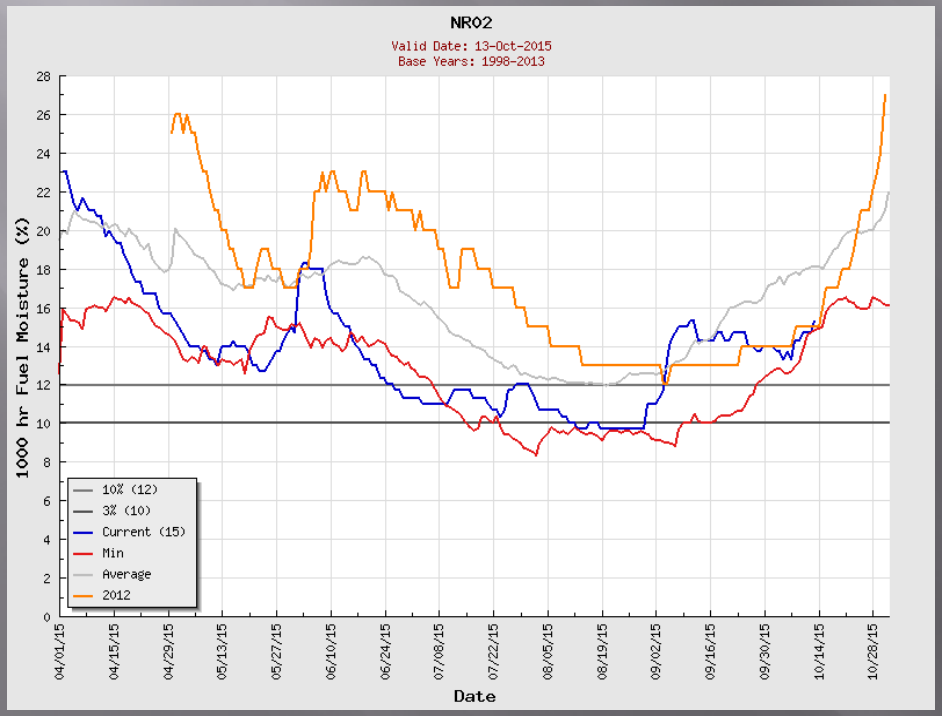


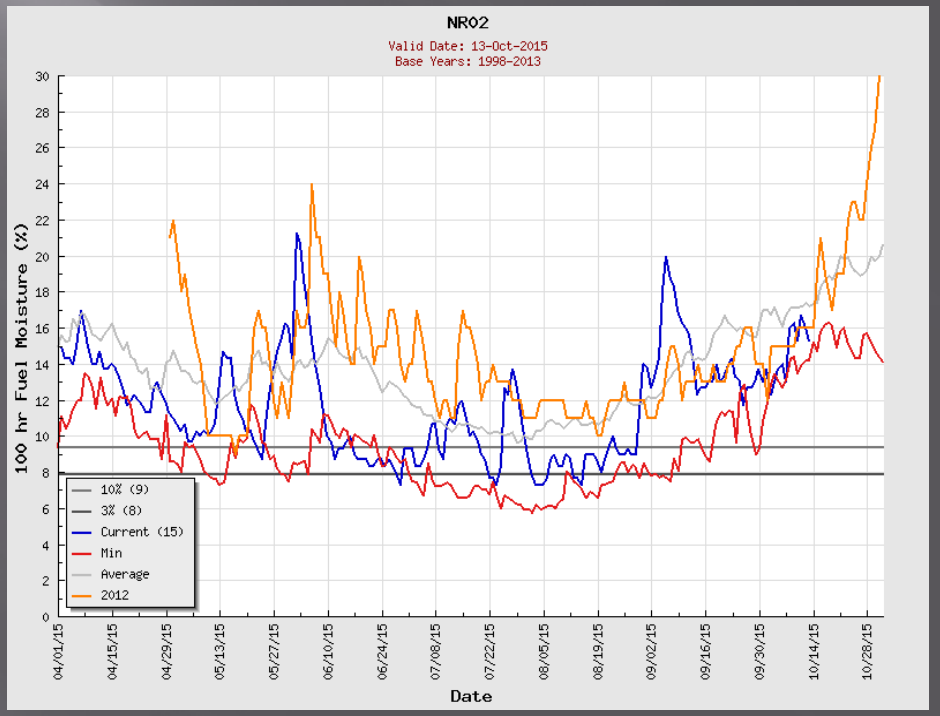
NR02 - Northwestern Montana



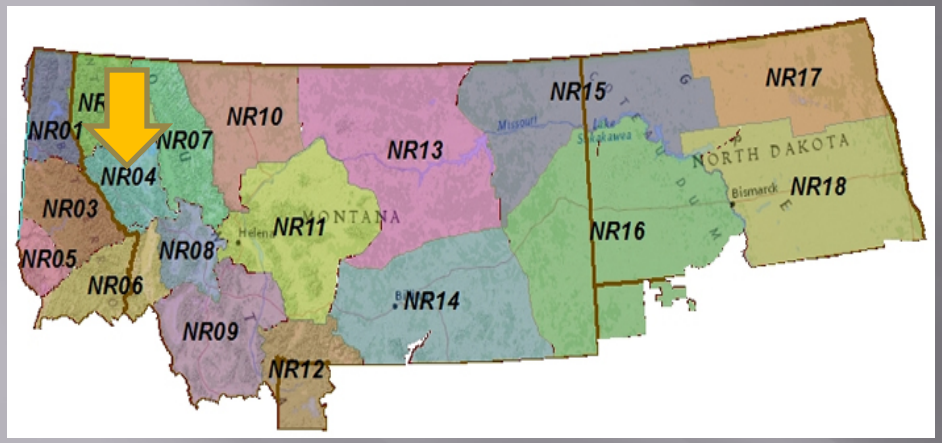
Libby Ranger Station
Troy Ranger Station
Eureka Ranger Station





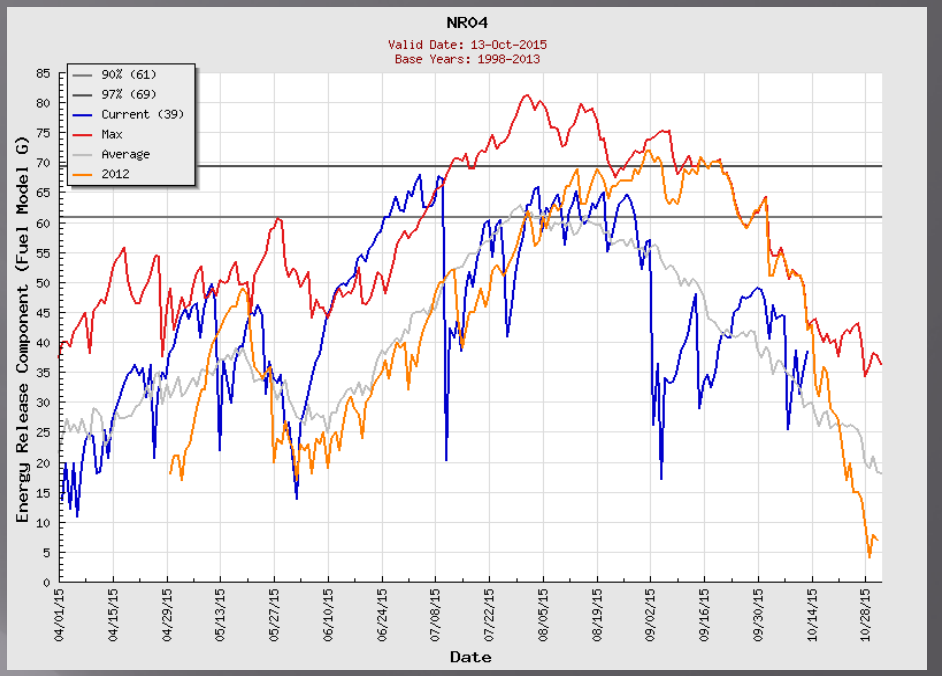


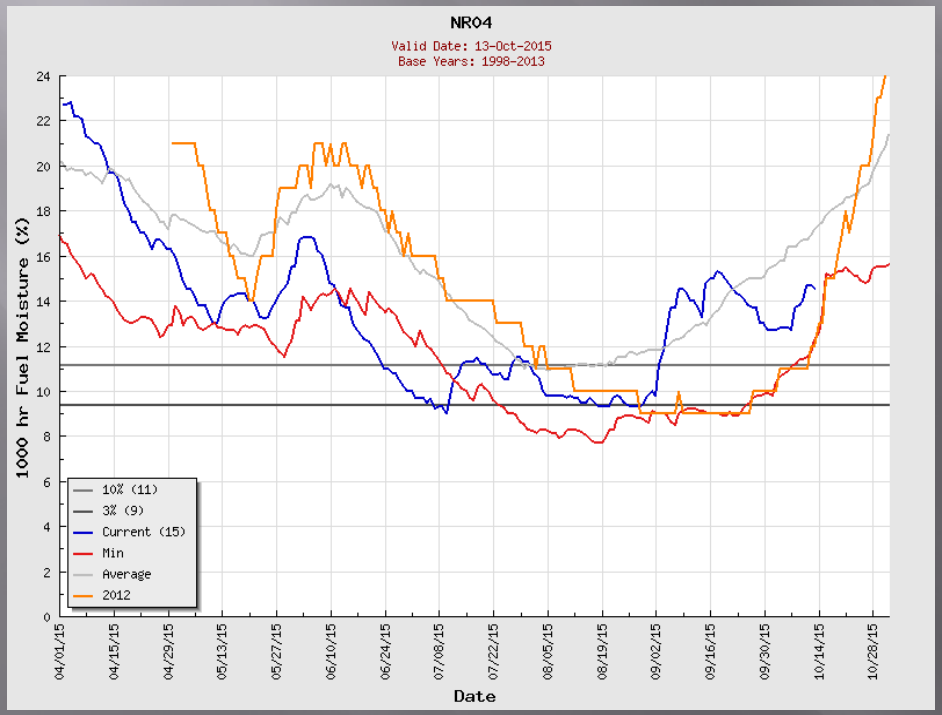
NR04 – Western Montana

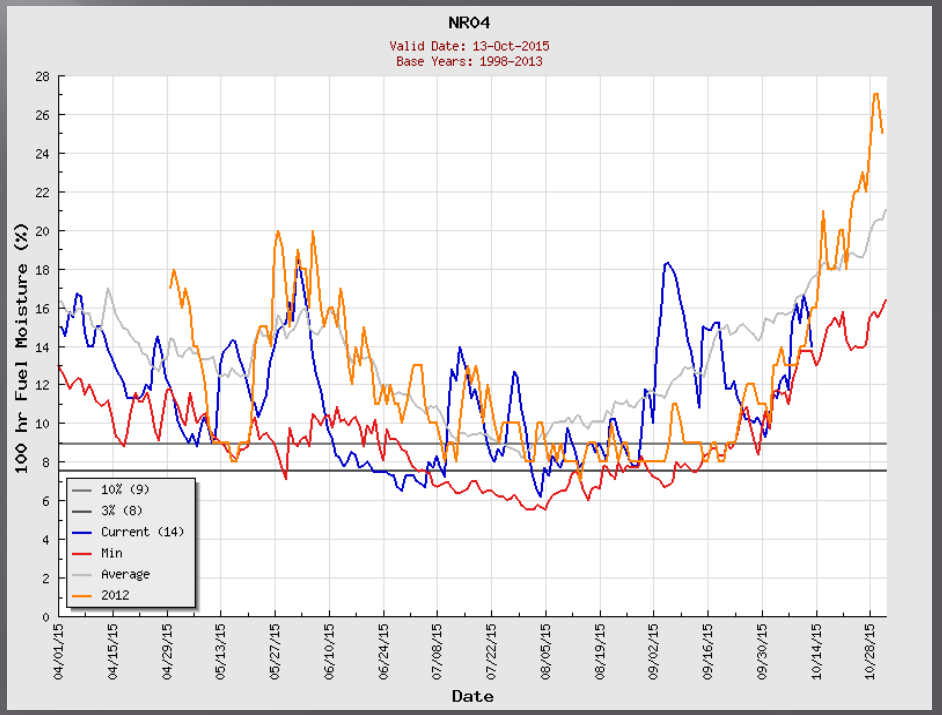


Plains
Missoula
St. Regis

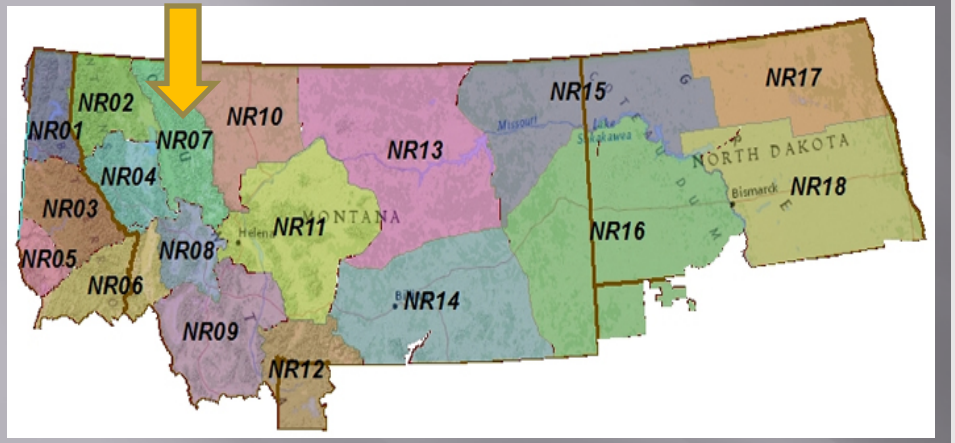
Hot Springs
Nine Mile



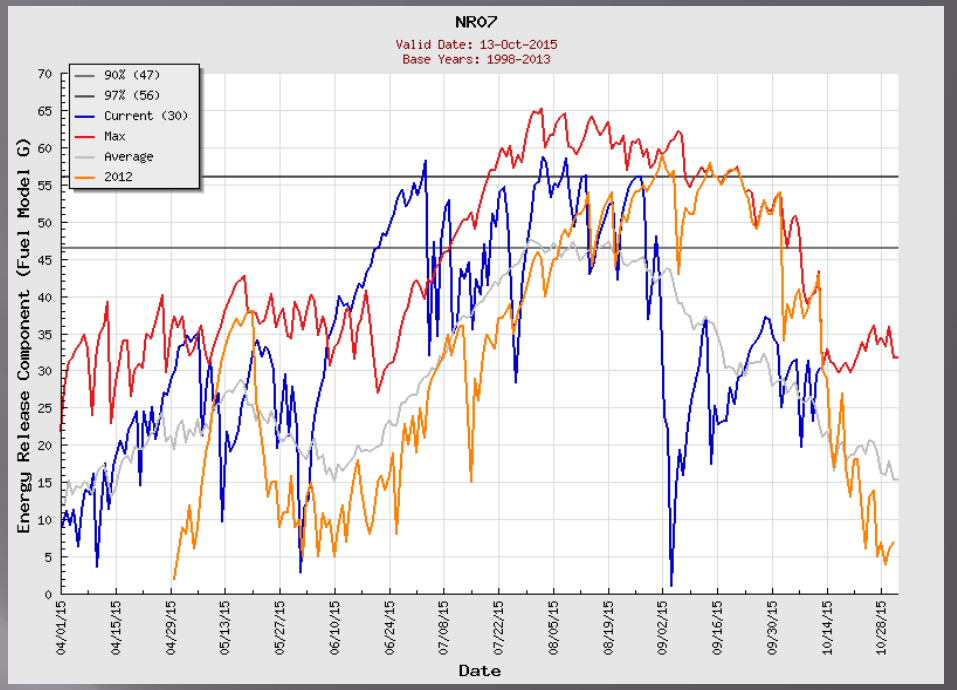


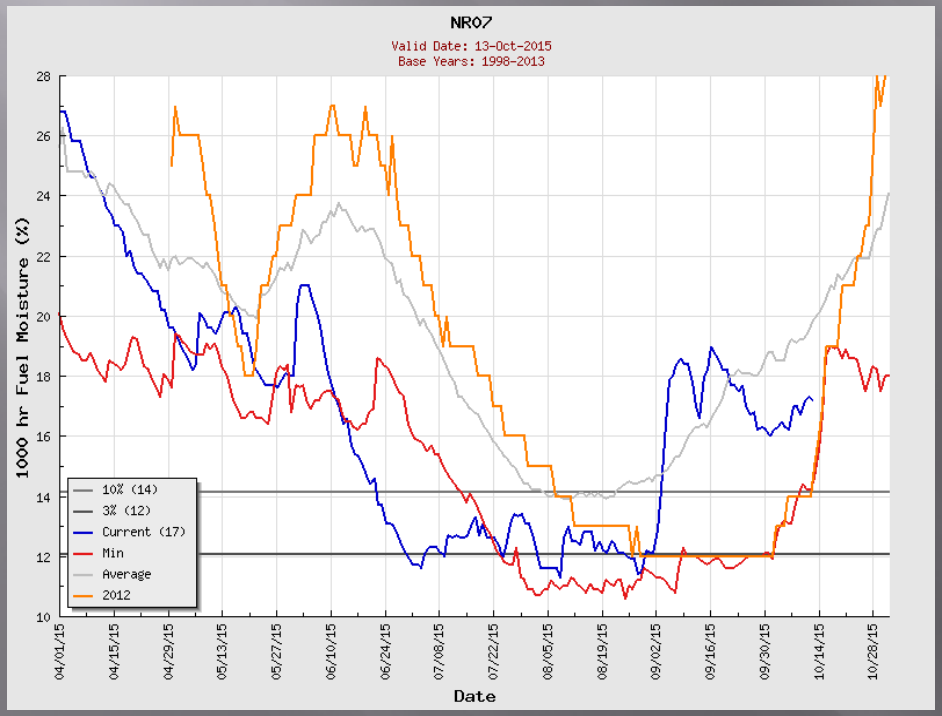


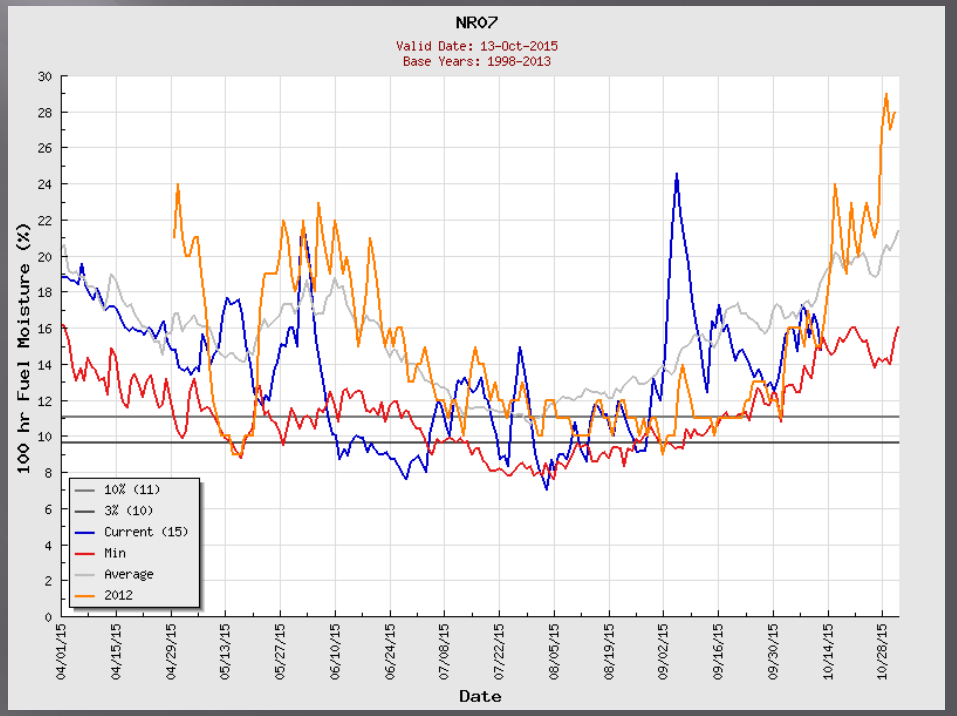
NR07 - Glacier National Park and Wilderness Areas



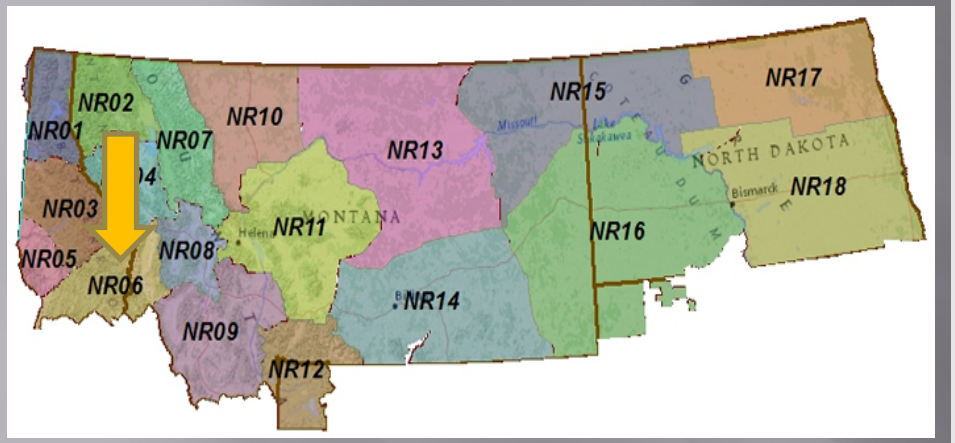
West Glacier
Cyclone
Condon Work Center
Hungry Horse
Benchmark





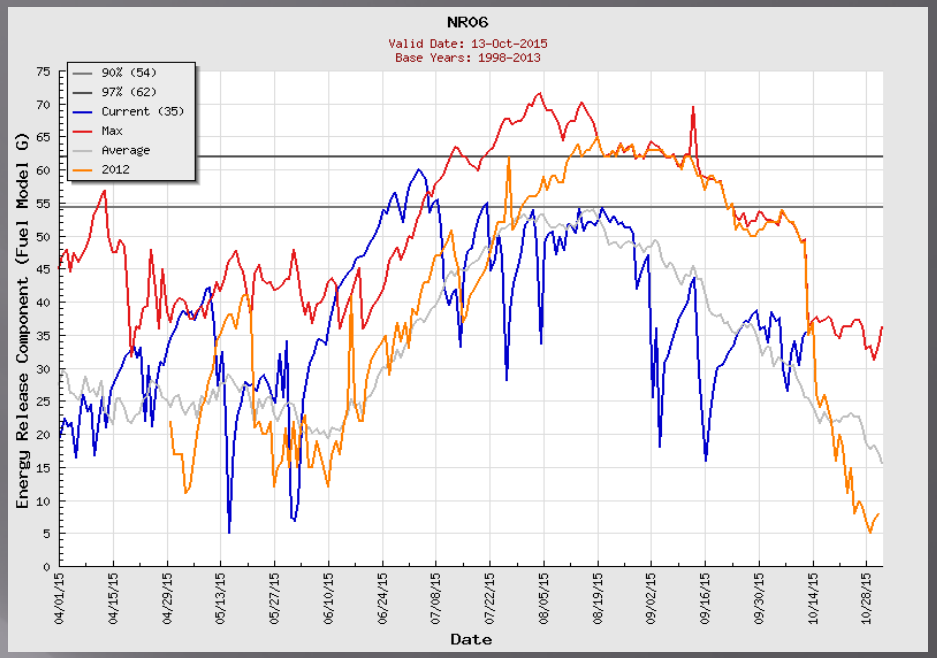


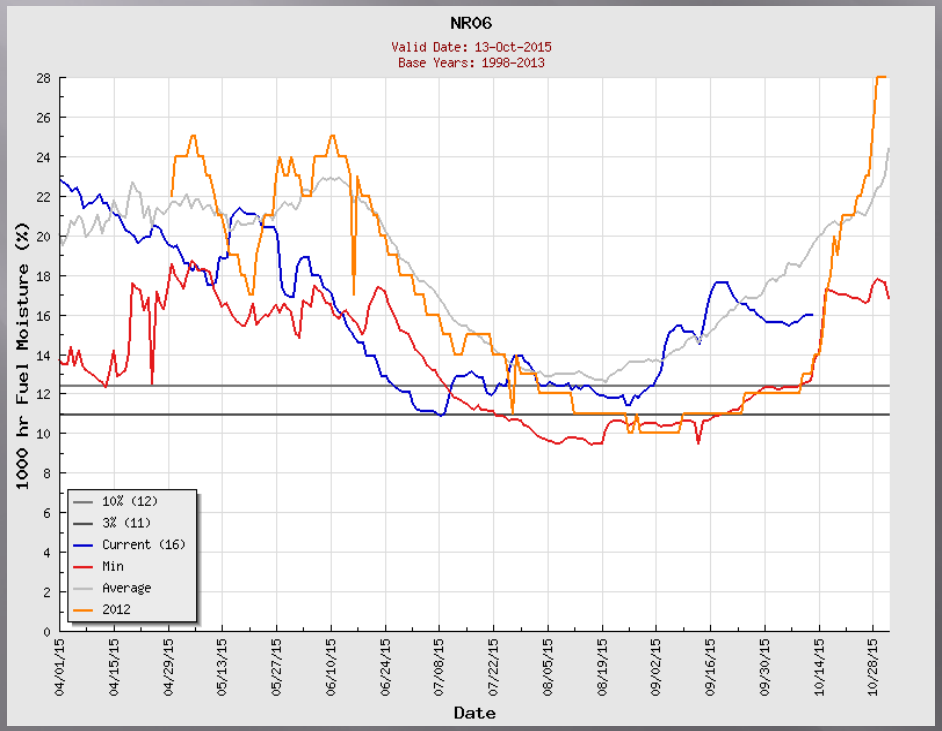
NR06 – North Central Idaho and Bitterroot/Sapphire Mountains

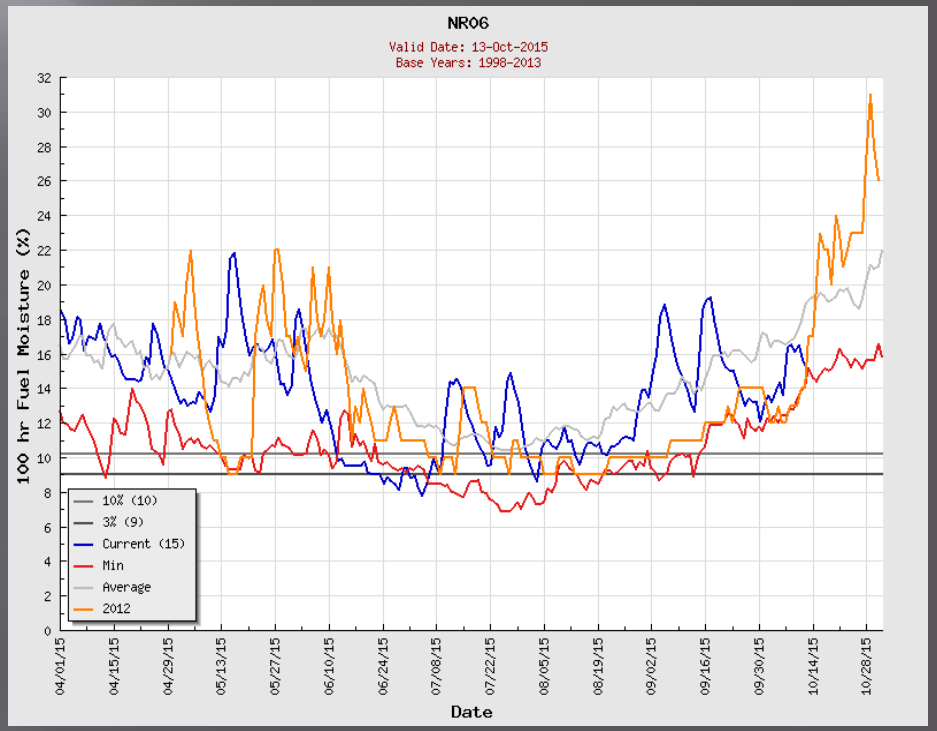


Fenn
Powell

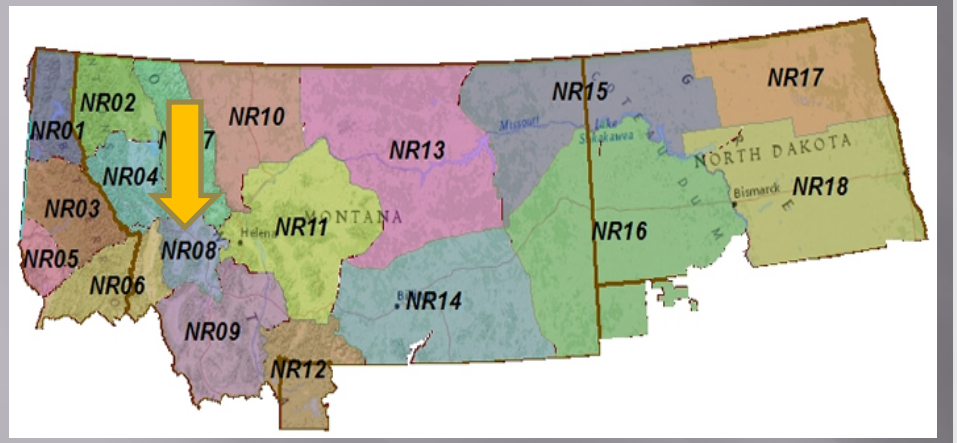
Stevi
West Fork



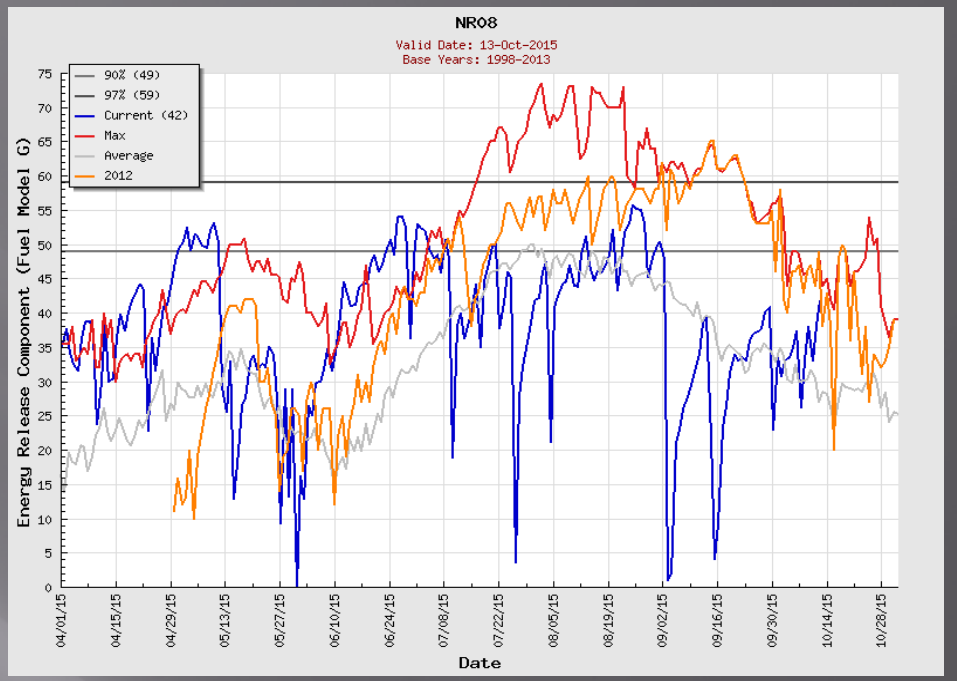


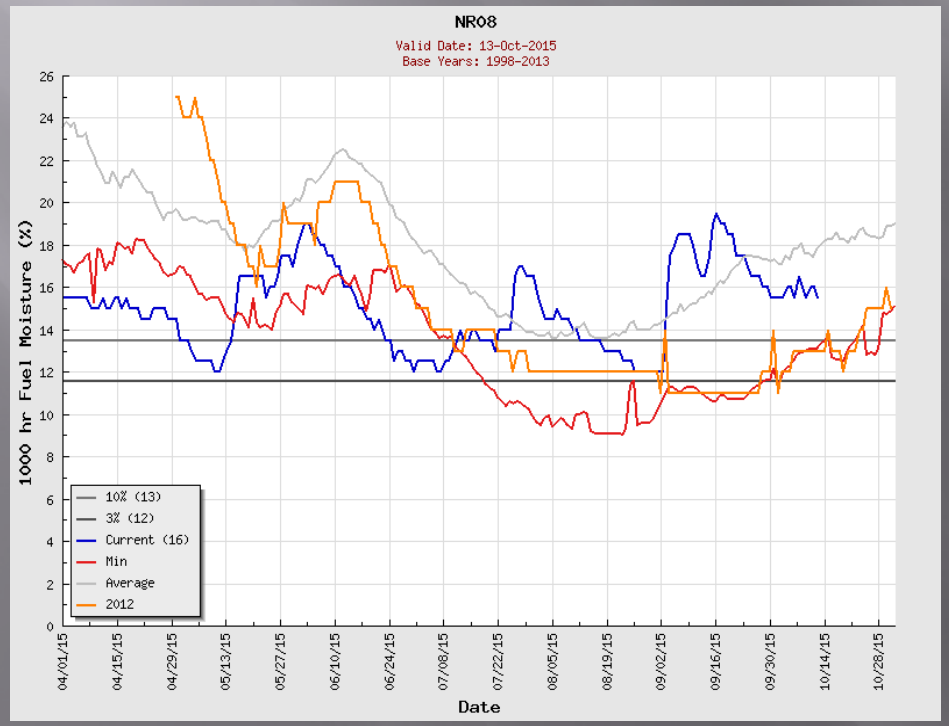


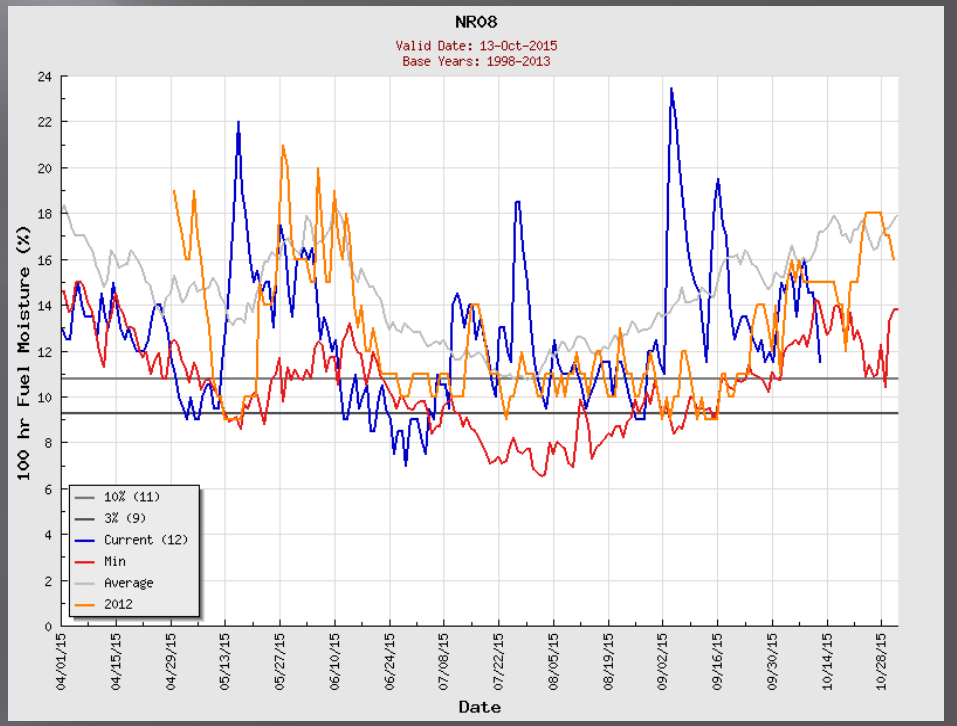
NR08 – Southwest Montana, West of Continental Divide



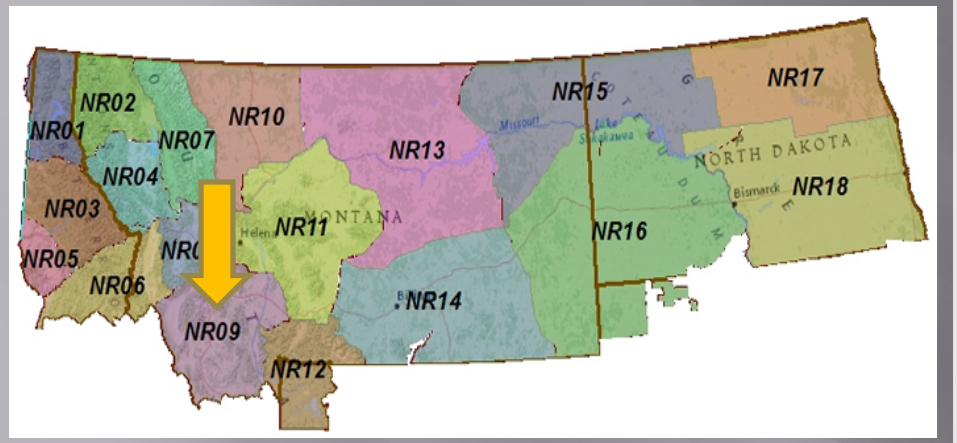
Lincoln
Phillipsburg





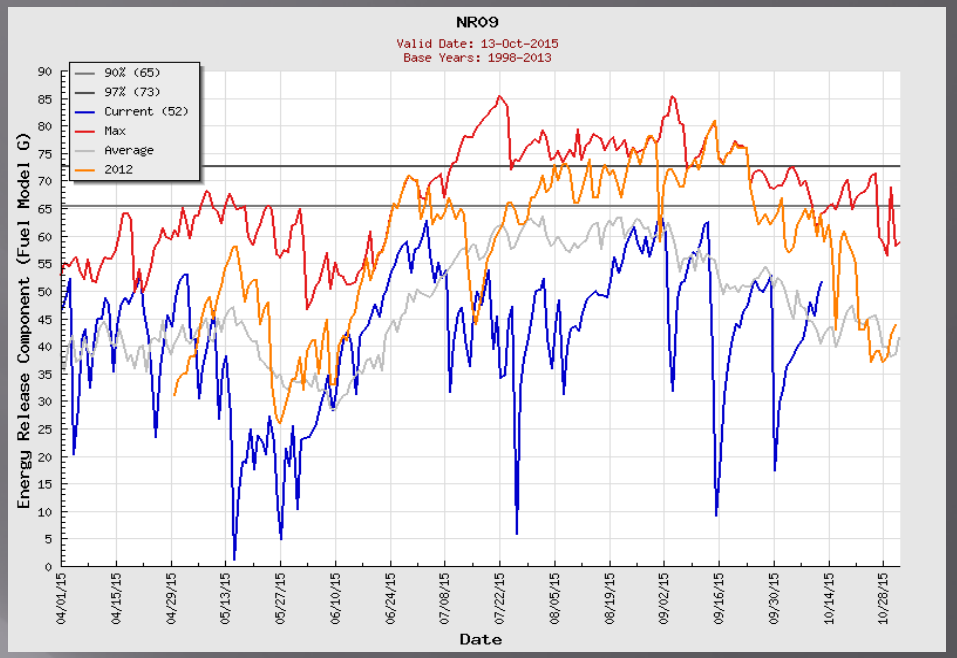


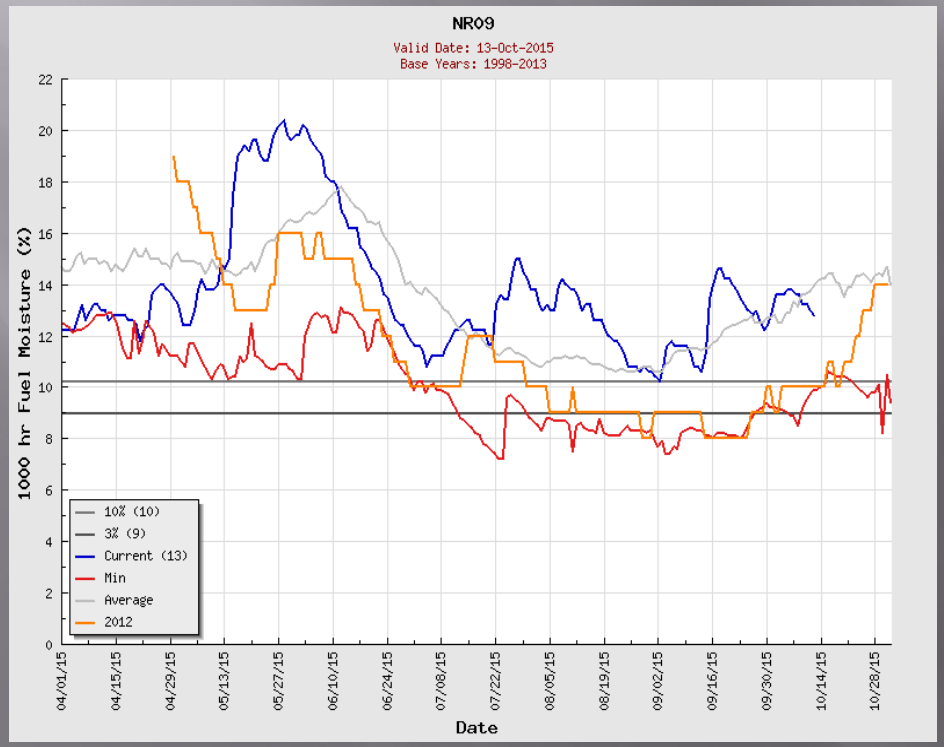
NR09 – Big Hole, Southwest Montana East of Continental Divide

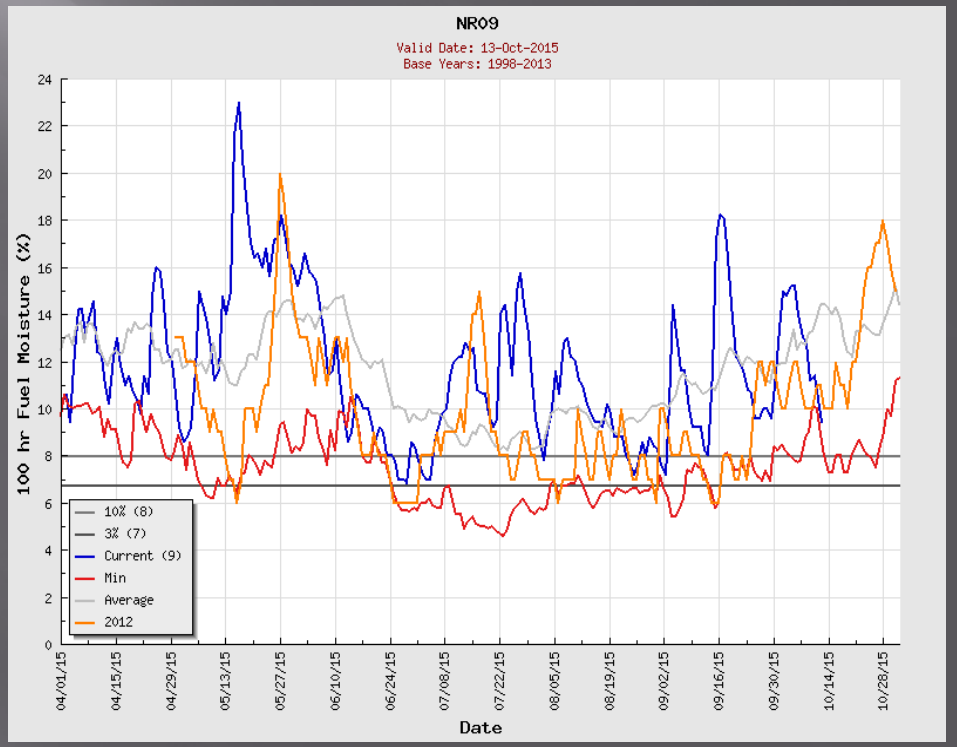


Jefferson
Brenner

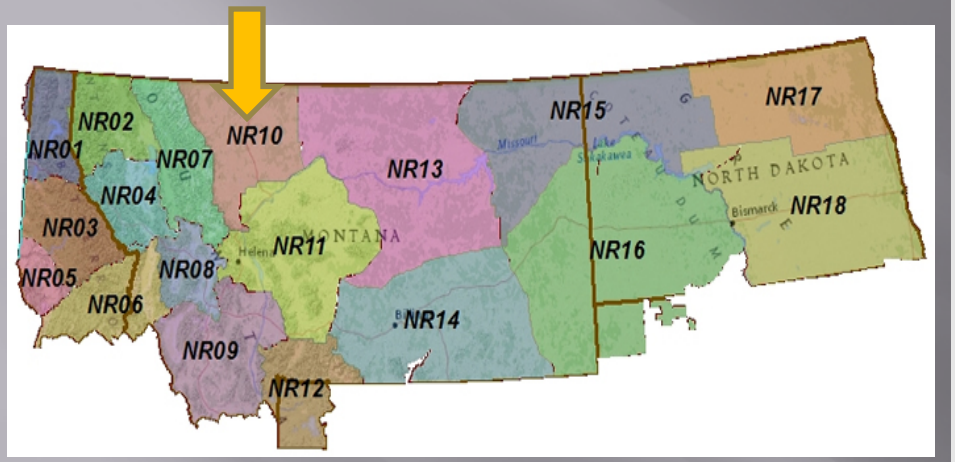
Ennis
Wise River



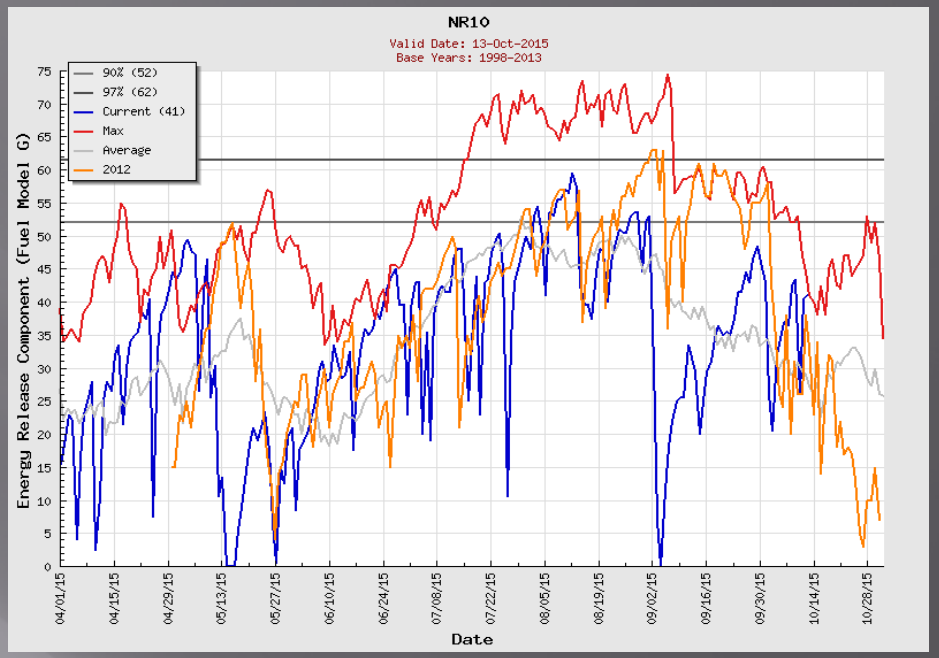


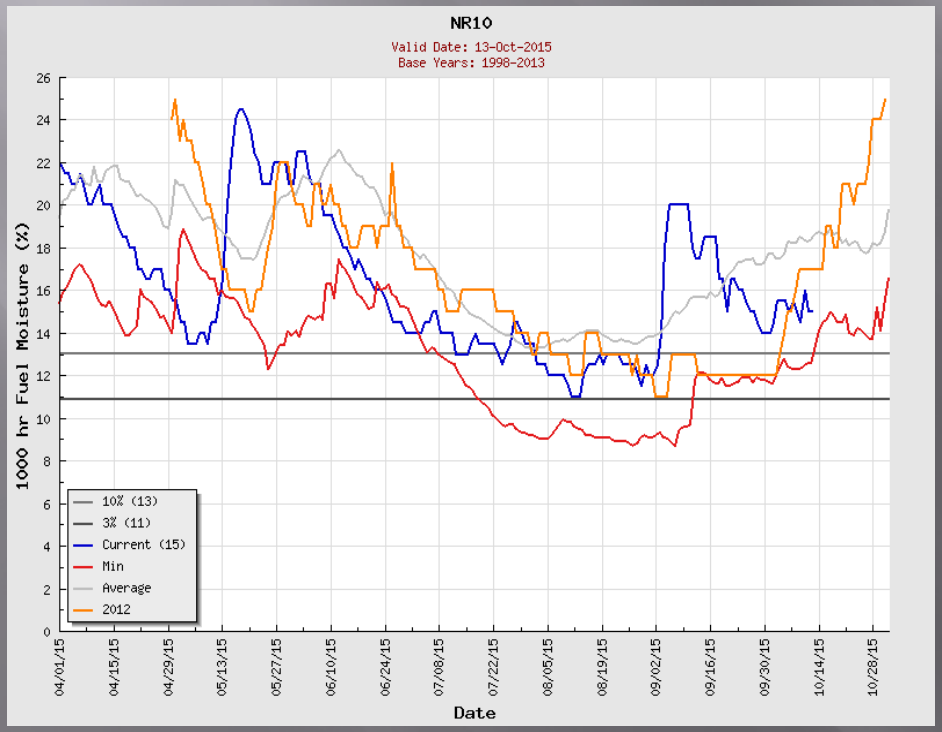


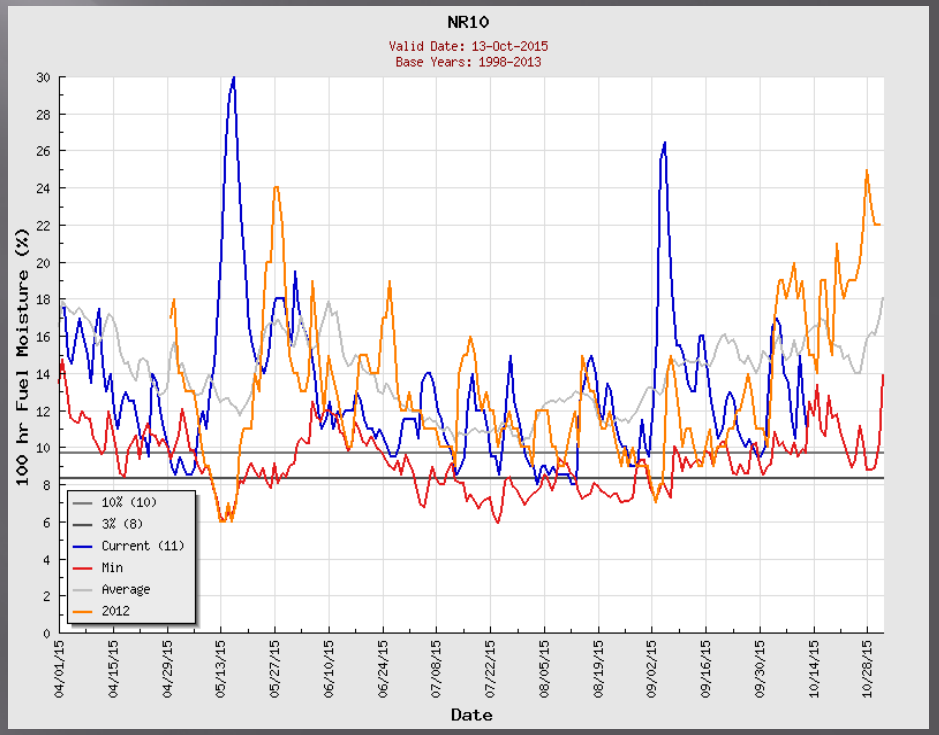
NR10 – Northern Front Range



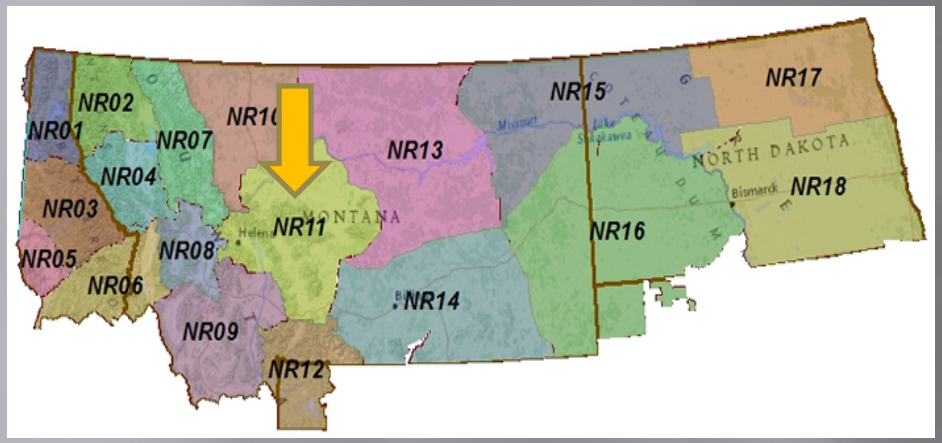
St. Mary
Gleason



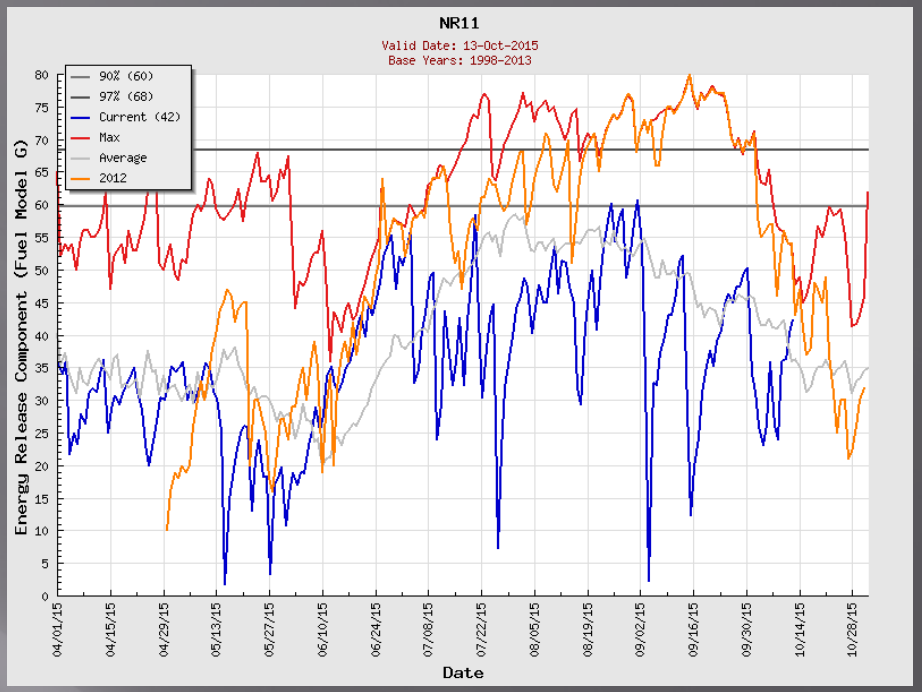


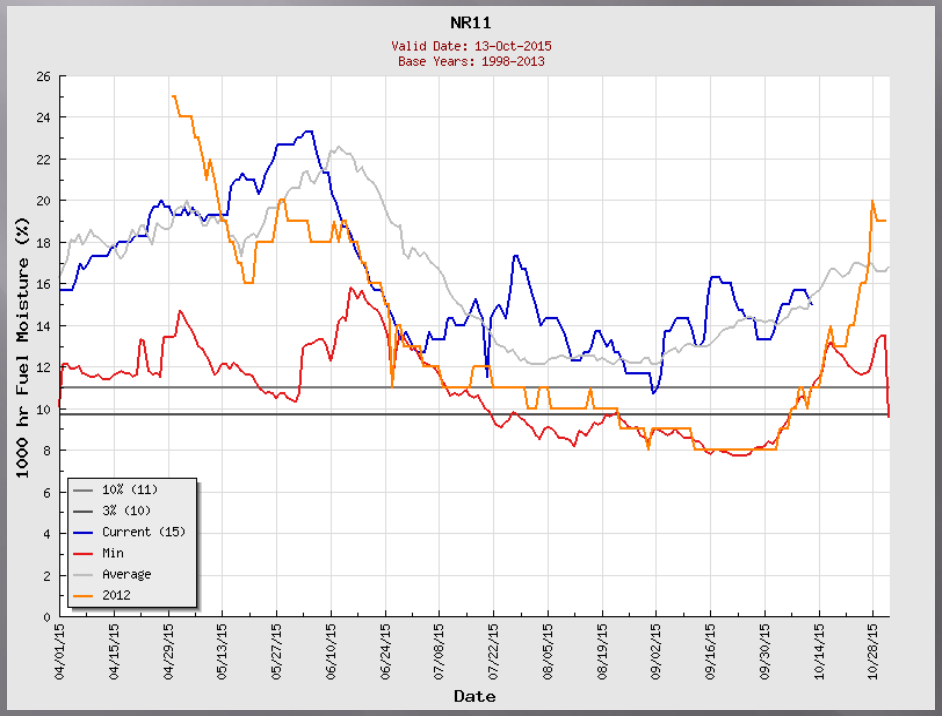


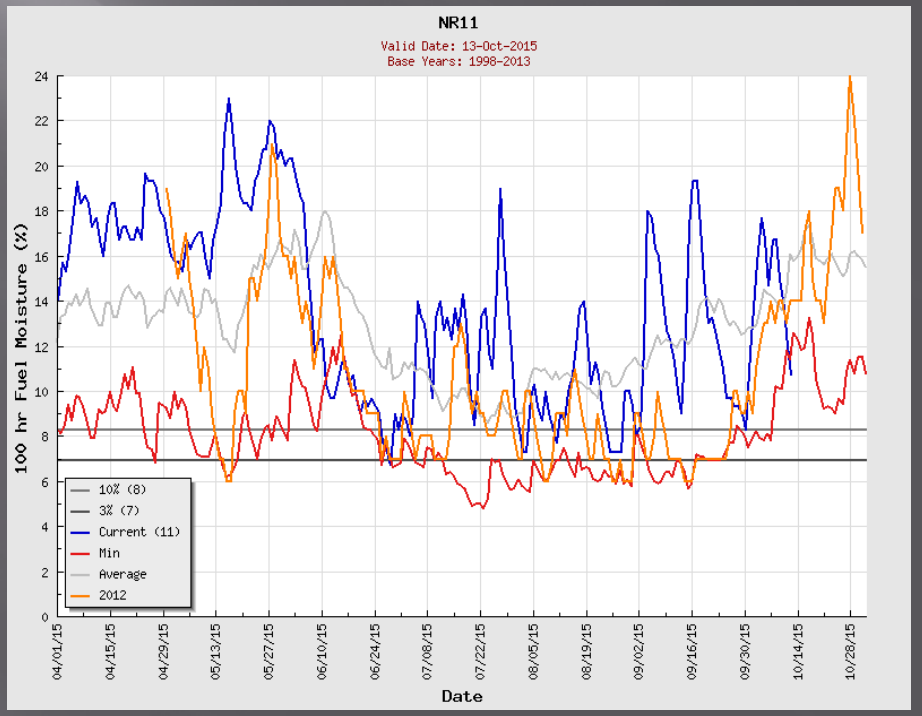
NR11 – West Central Montana



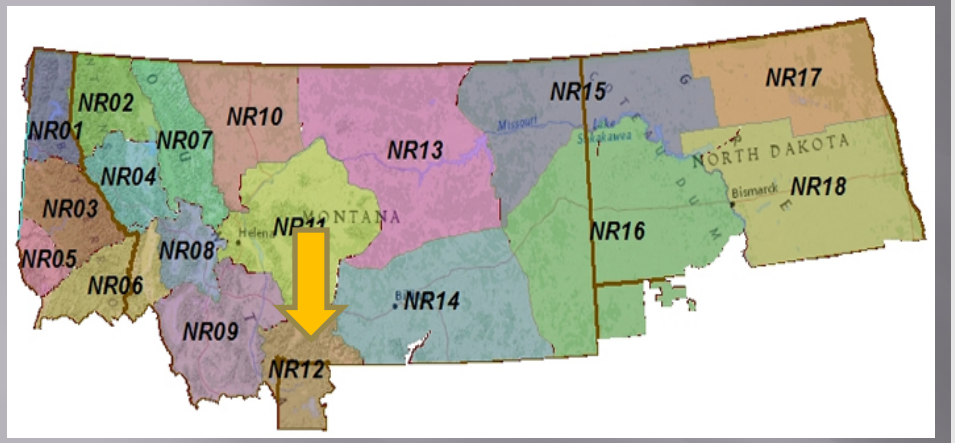
Helena
Porphyry
White Sulphur Springs



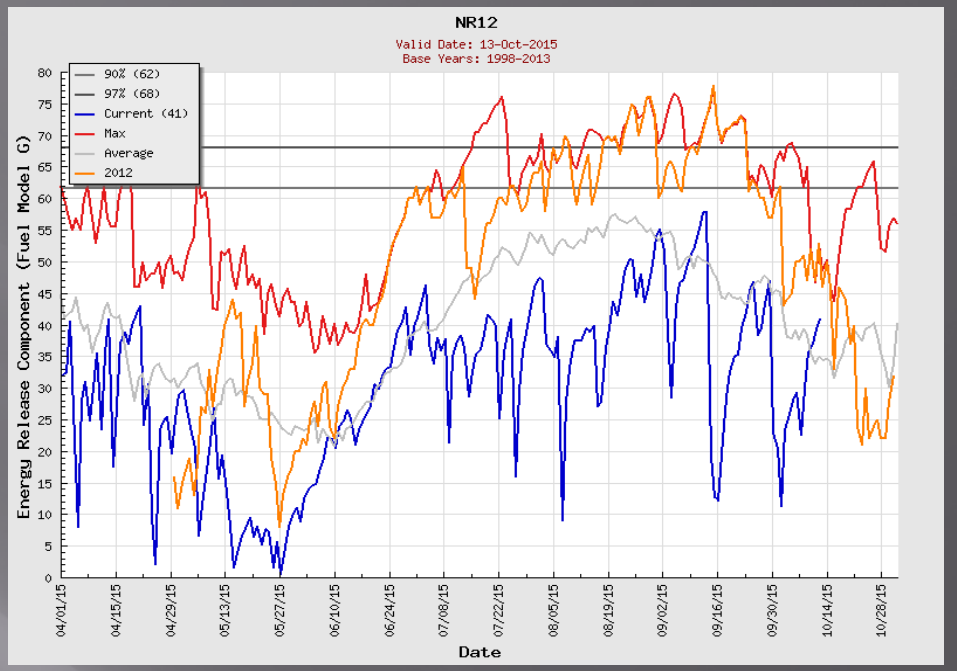


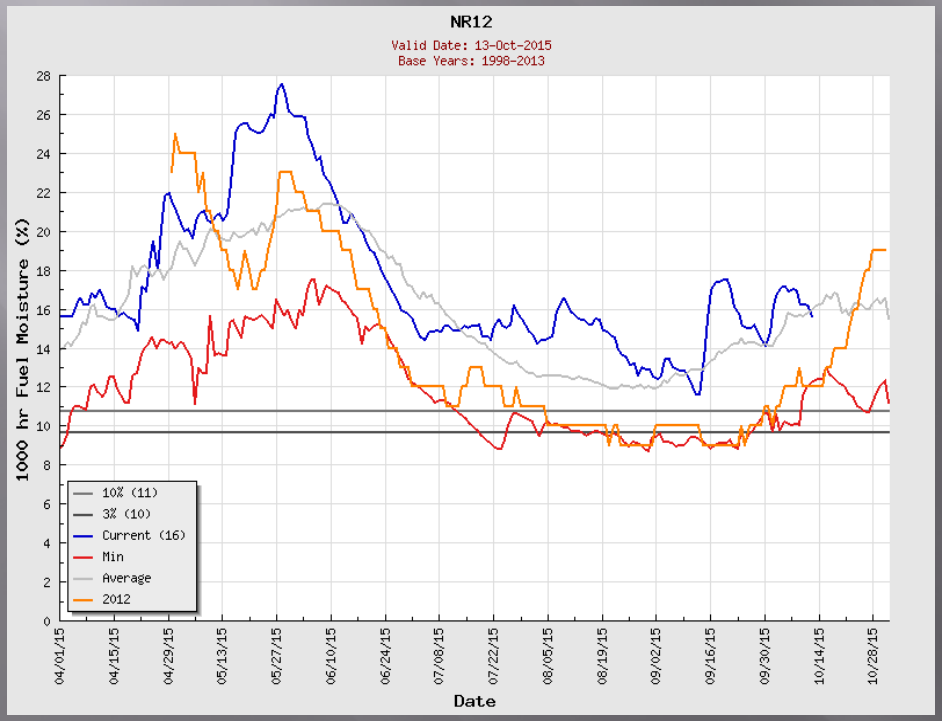


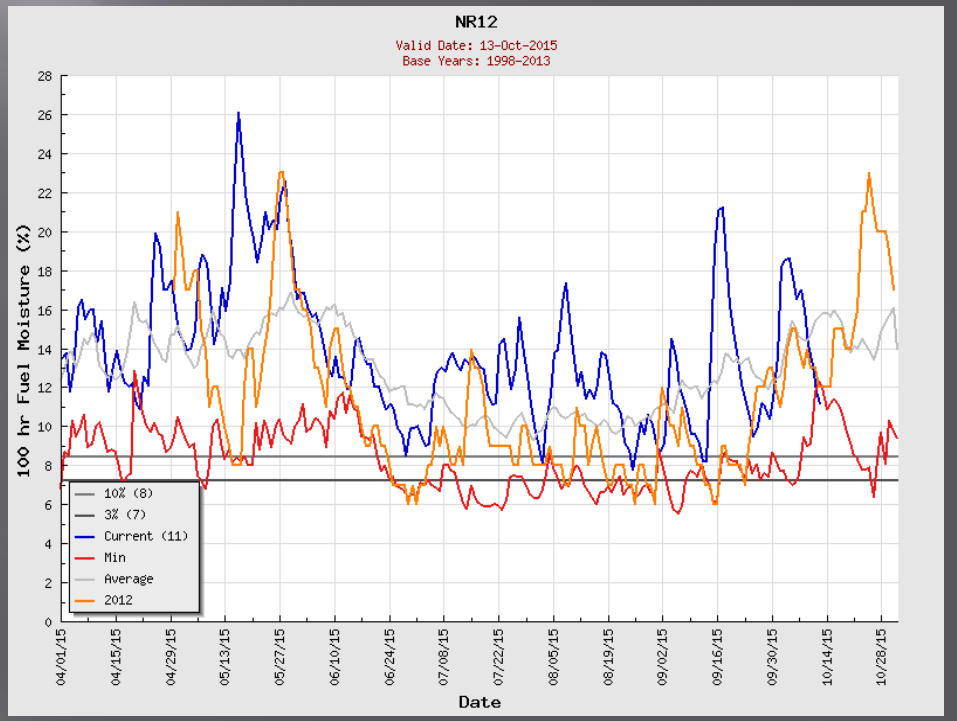
NR12 – South Central Montana and Yellowstone YP



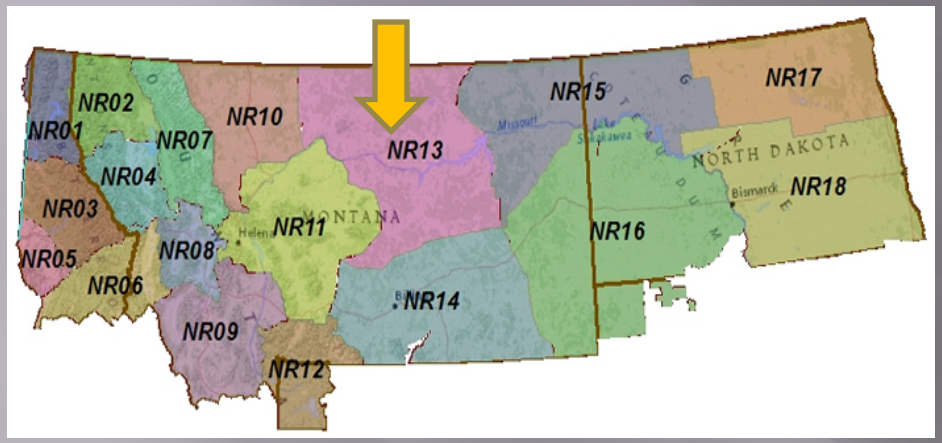
Shenango
Fishtail
Bechler
Hebgen Lake
Timbercrest
Quadrant



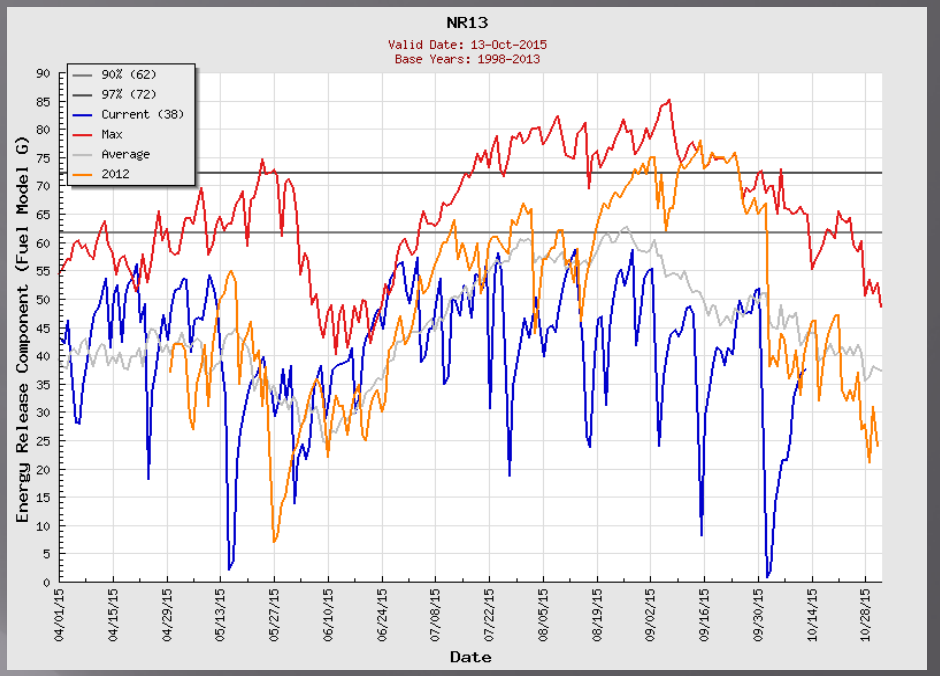


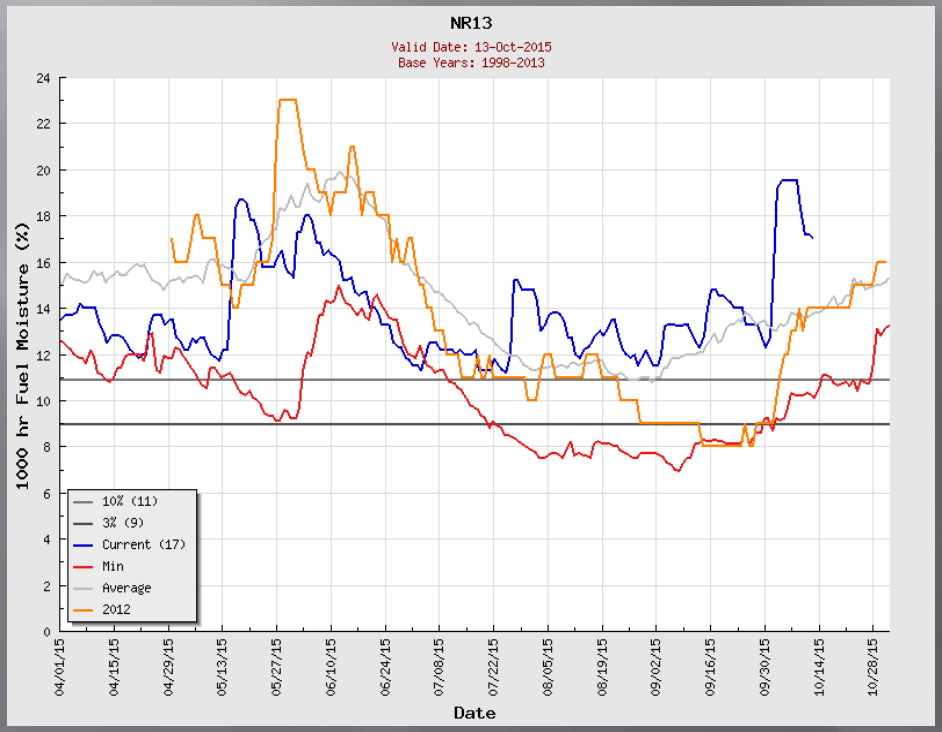


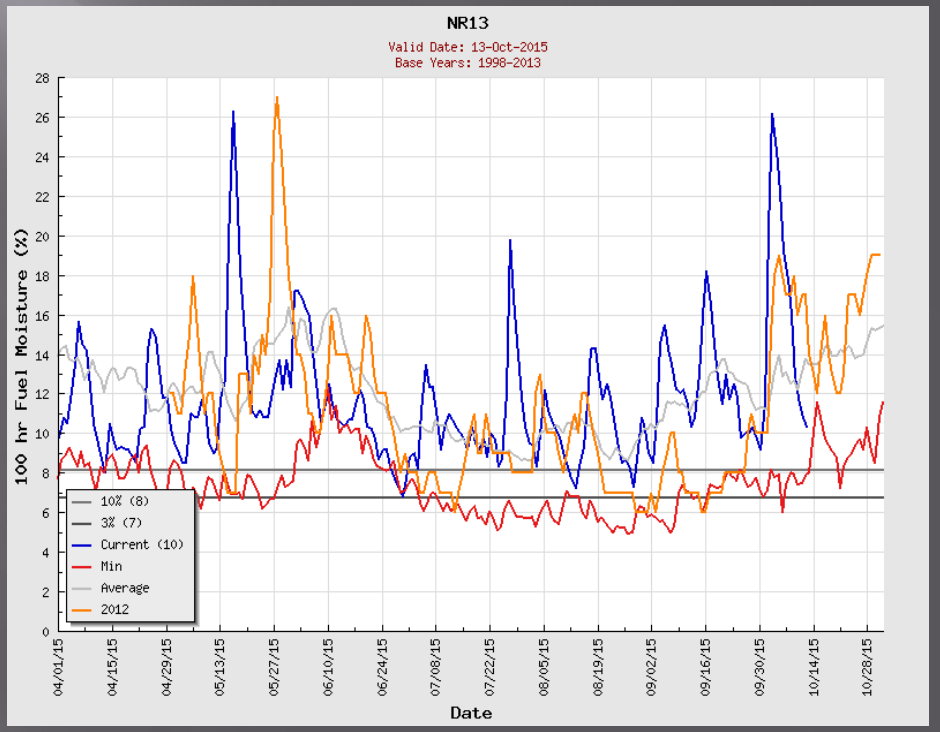
NR13 – Northern Plains and Missouri Breaks



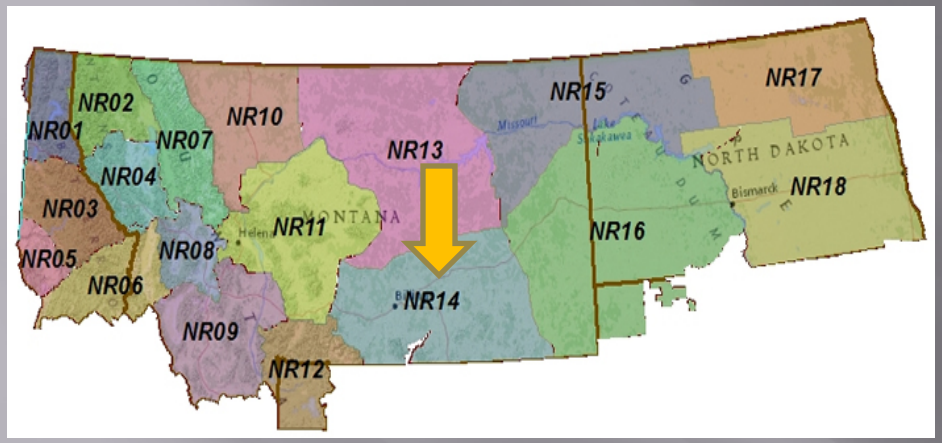
Rocky Boy
Bluff Creek
Armells Creek
Little Bullwhacker
King Coulee
South Sawmill Creek



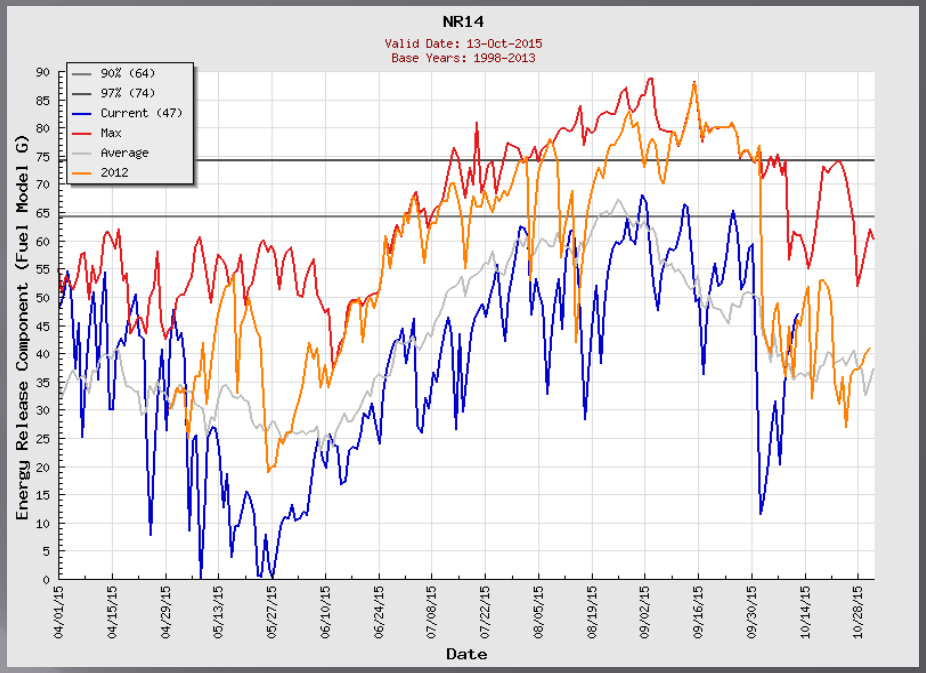


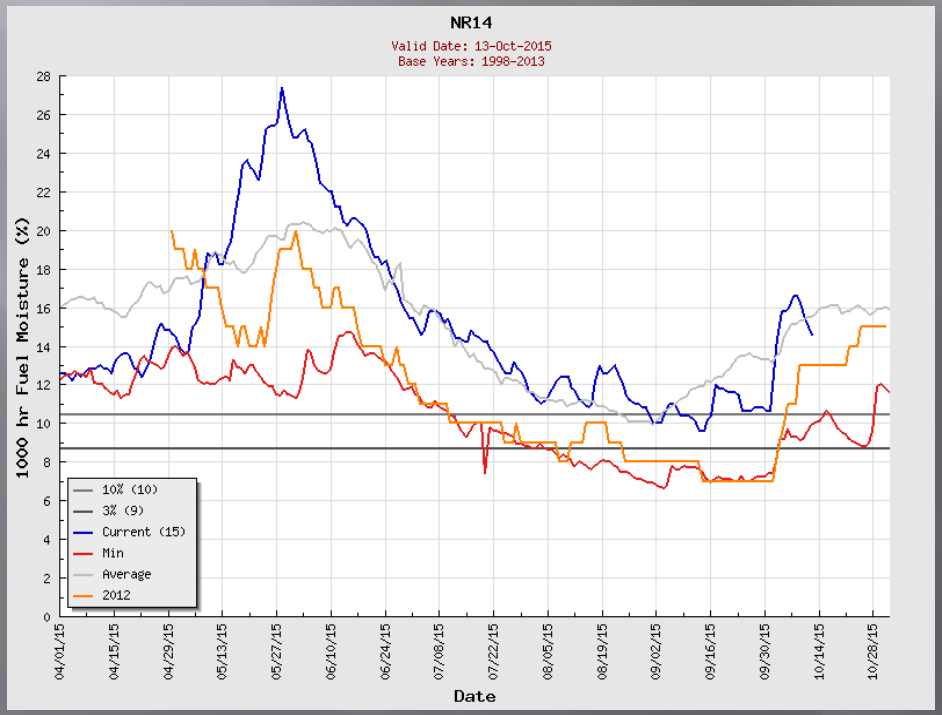


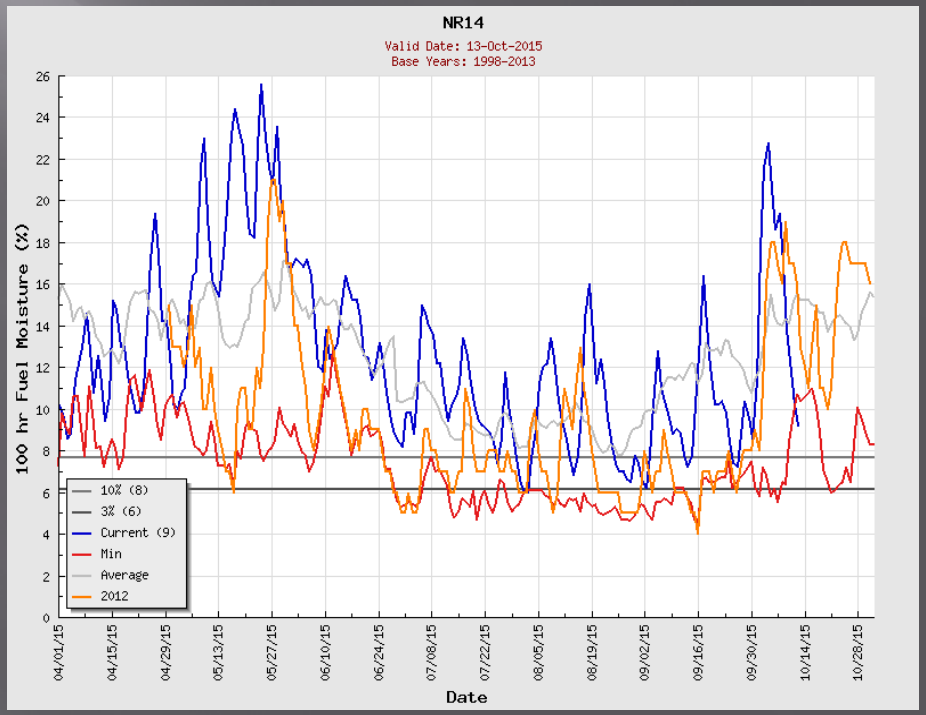
NR14 – Southern Montana (Big Horn/Powder River)



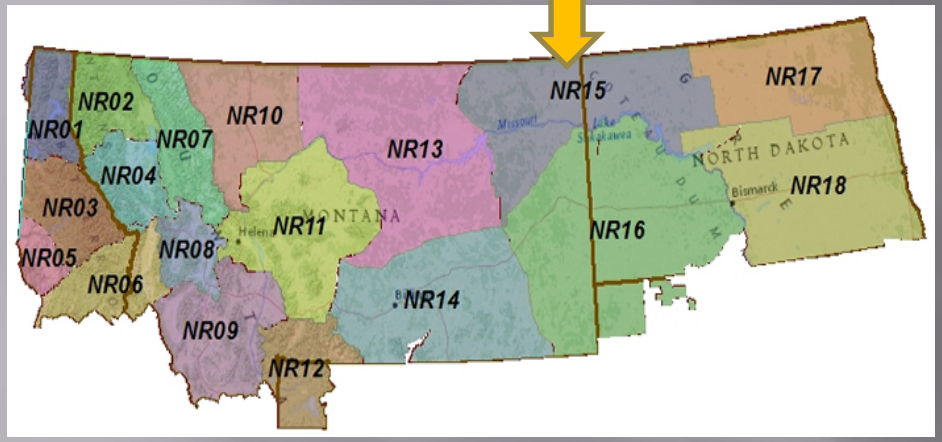
Wolf Mountain
Bighorn Mountain
Fort Howes
Pryor Mountain
Badger Peak





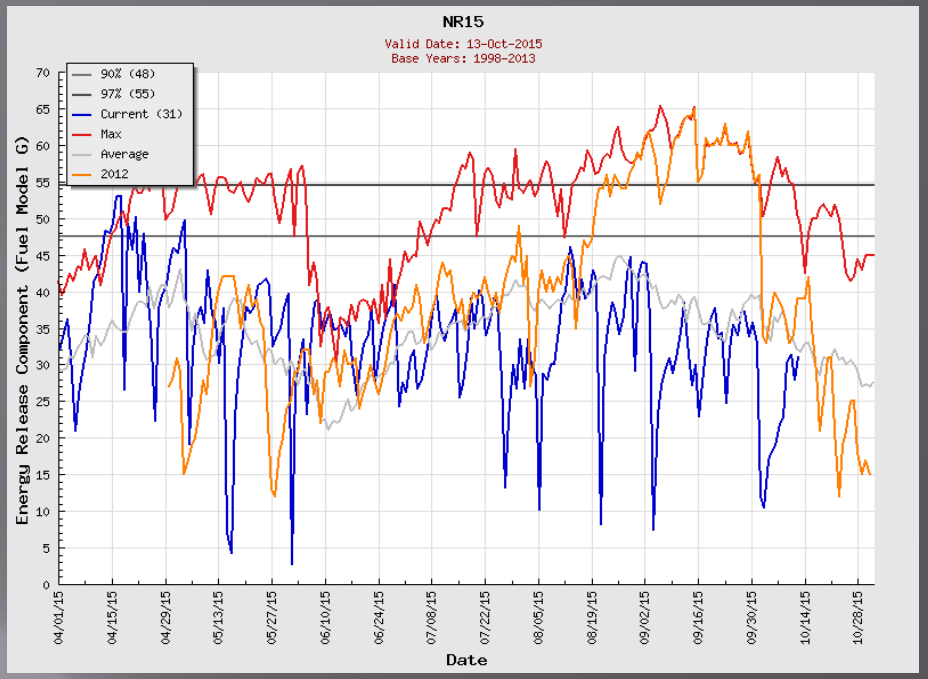


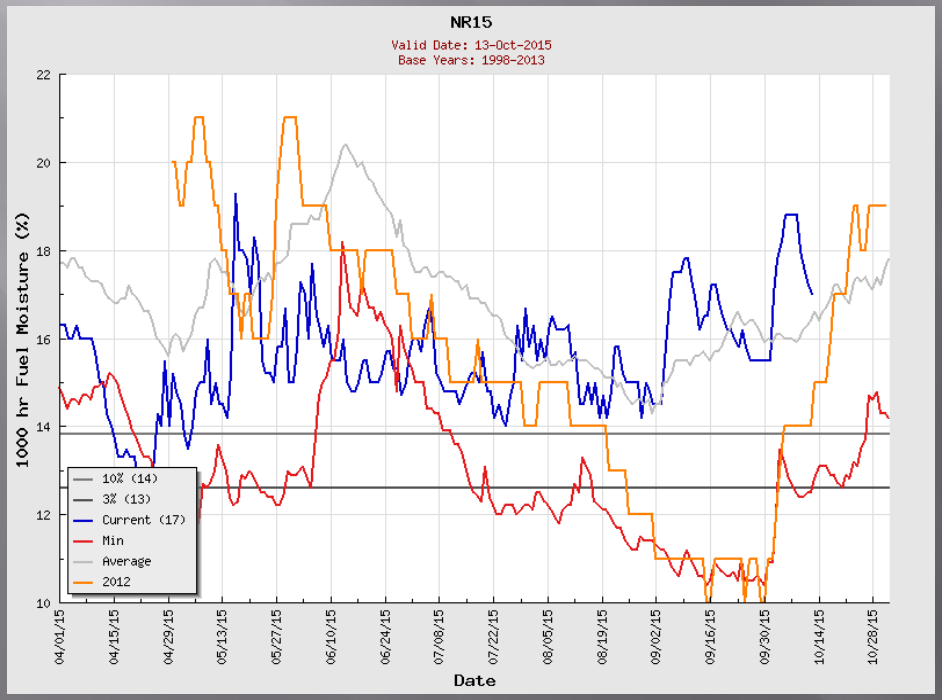
NR15 – Northeast Montana/Northwest North Dakota

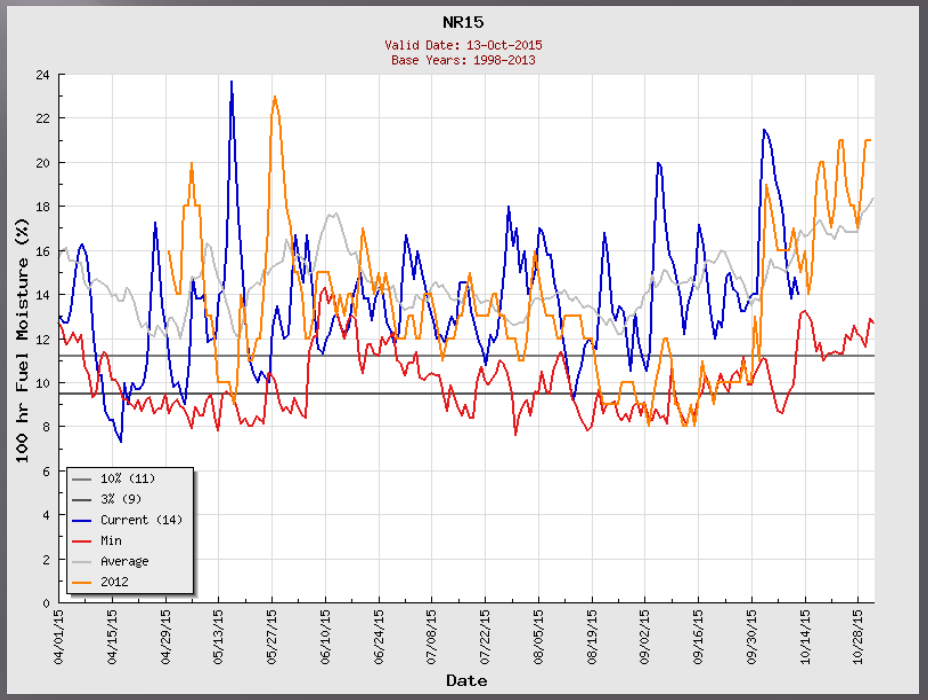


Poplar
Lostwood

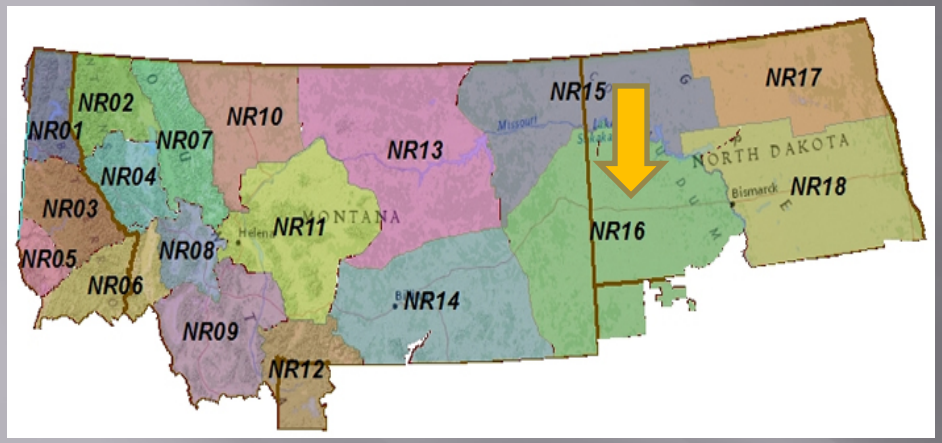
Crosby
Watford City





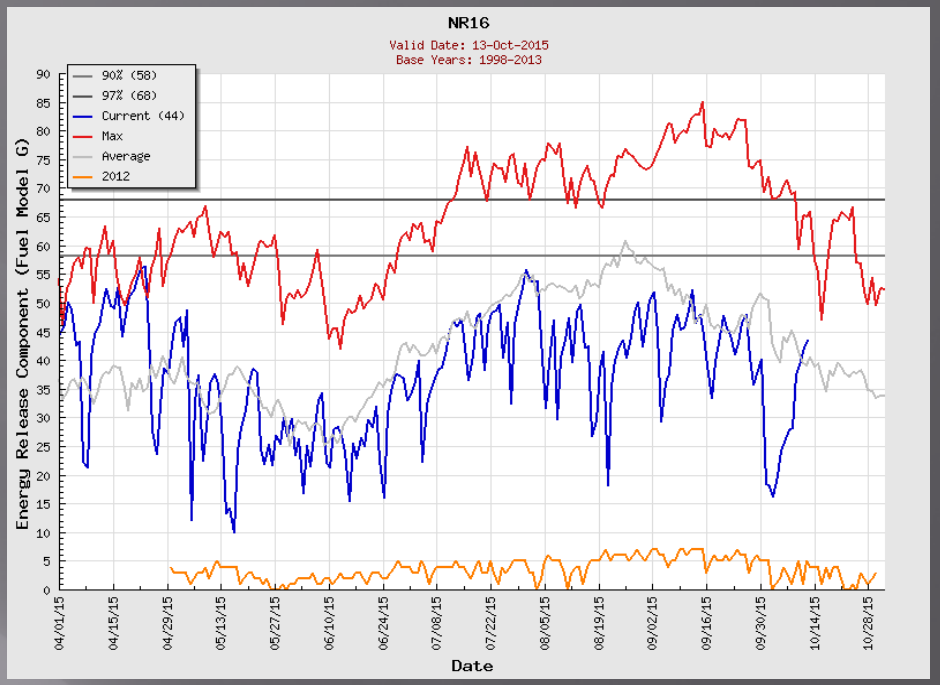


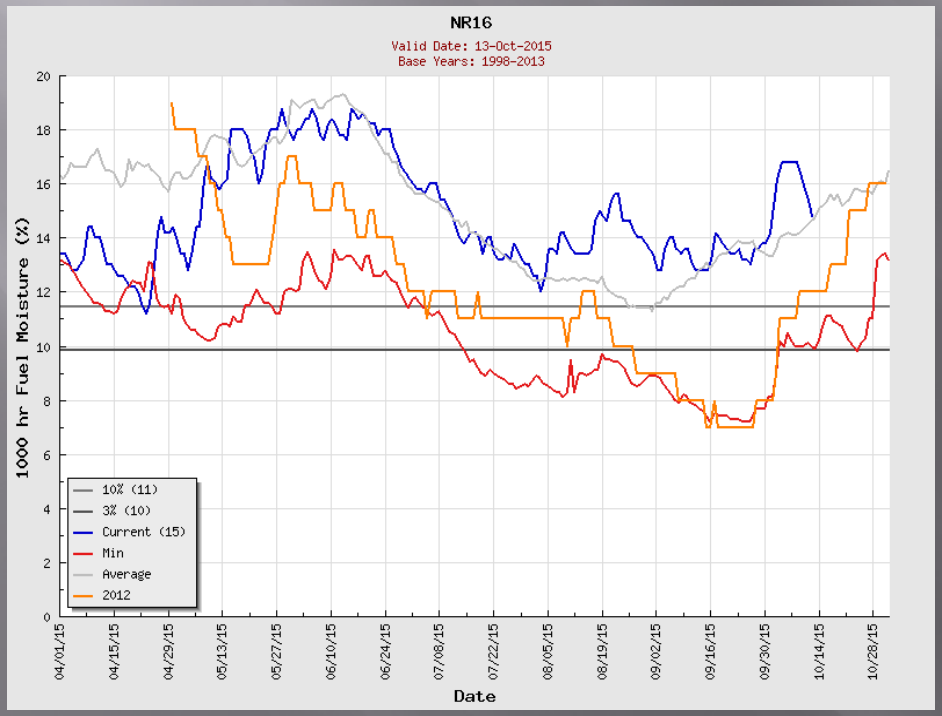
NR16 – Southeastern Montana/Southwestern South Dakota

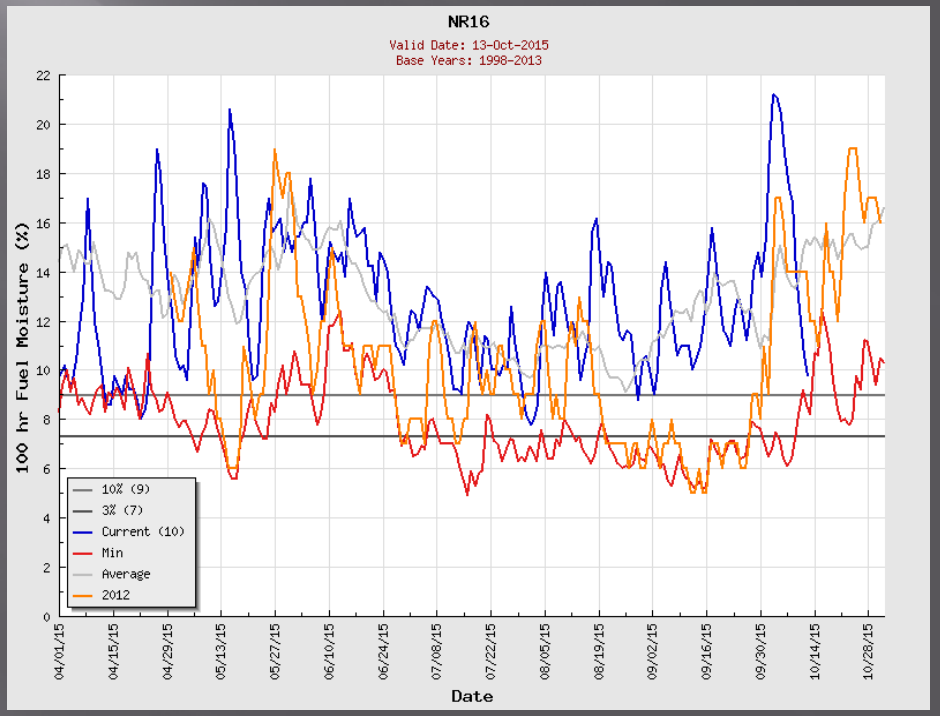


Big Sheep Mountain
Cannonball Creek

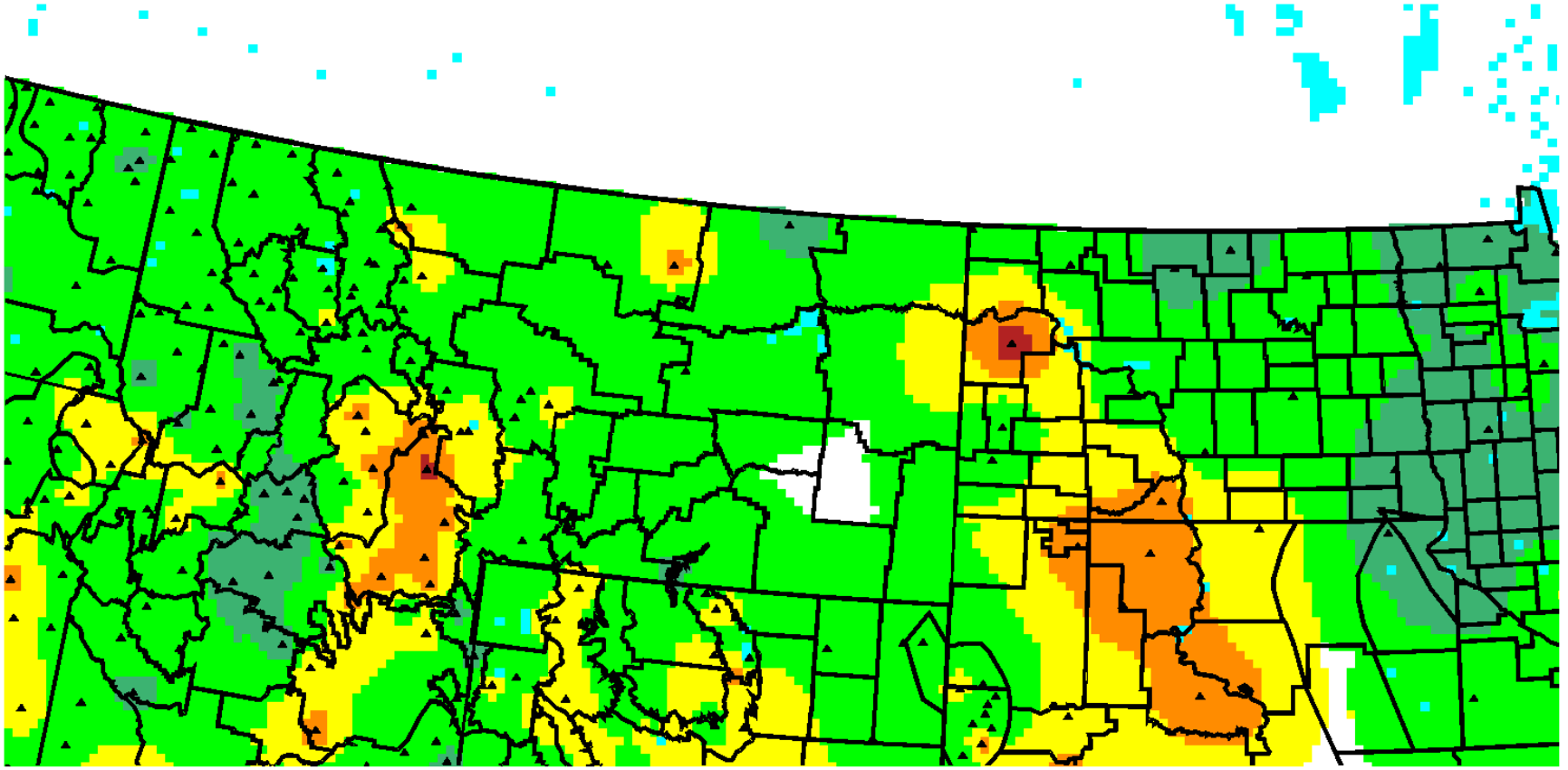
Knowlton
Sand Creek







Northern Rockies Observed Fire Danger Class: 13-OCT-15
(Fire Weather Zones)



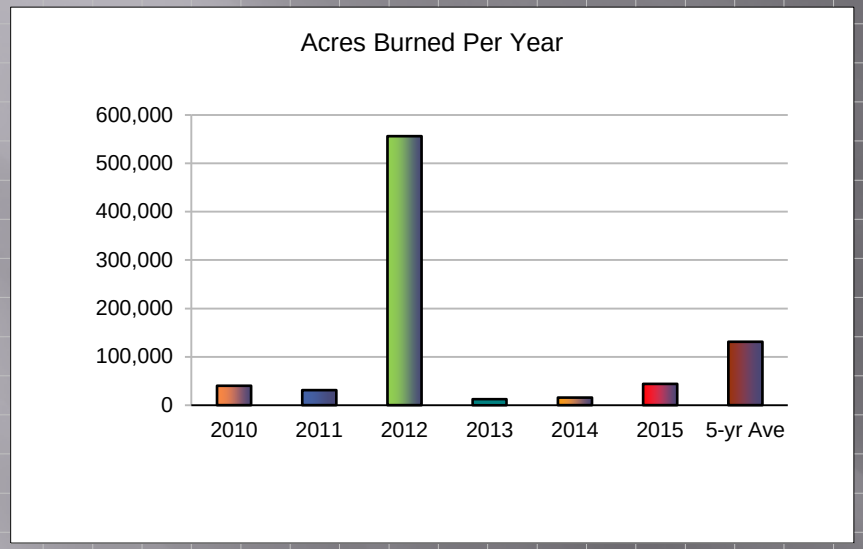
LEGEND

- Low
- Moderate
- High
- Very High
- Extreme
- Water

FireLab
MISSOULA, MONTANA

WFAS-MAPS National Interagency Fire Center

Fire Burned Summary - 2015



Fires

600
500
400
300
200
100
0

1/10 1/20 1/30 2/10 2/20 2/28 3/10 3/20 3/30 4/10 4/20 4/30 5/10 5/20 5/30 6/10 6/20 6/30 7/10 7/20 7/30 8/10 8/20 8/30 9/10 9/20 9/30 10/10 10/20 10/30 11/10 11/20 11/30 12/10 12/20

2015
2014
2013
2012
2011
2010
2003
5-yr Avg

2015 - 365 Fires = 43,974 Acres
2014 - 288 Fires = 15,663 Acres
2013 - 306 Fires = 12,439 Acres
2012 - 410 Fires = 556,247 Acres
2011 - 259 Fires = 31,064 Acres
2010 - 260 Fires = 40,115 Acres
2003 - 567 Fires = 8,115 Acres

5-yr Avg - 305 Fires = 131,086 Acres

NRCC
Northern Rockies Coordination Center

Mobilizing Incident Resources ...throughout Montana, North Dakota, Northern Idaho, a small portion of Northwestern South Dakota and Yellowstone National Park

Wednesday, May 22, 2013

INCIDENT INFORMATION

PREDICTIVE SERVICES
- Intelligence
- Weather
- Fuels/Fire Danger
- Outlooks

LOGISTICS / DISPATCH
- Dispatch Operations
- Aviation
- Crews
- Equipment/Supplies
- Overhead

ADMINISTRATIVE
- Northern Rockies Coordinating Group
- Policy and Reports
- Incident Business Management
- Safety Management
- Software Applications
- Training

RELATED LINKS
- National
- Area

Welcome to the NORTHERN ROCKIES COORDINATION CENTER

The **Northern Rockies Coordination Center (NRCC)** is the interagency focal point for coordinating the mobilization of resources for wildland fire and other all-hazard incidents throughout the Northern Rockies Area and, when necessary, for assignment throughout the United States. Located in Missoula, Montana, the Center also provides Intelligence and Predictive Services related products for use by the wildland fire community for purposes of wildland fire and incident management decision-making.

There are five primary components to the NRCC website.

- Incident Information provides general information on large wildland fires, fire restrictions and closures, and other relevant activity throughout the Geographic Area.
- Predictive Services provides operational products and links to incident situation information, maps, resources, current fire weather conditions, forecasts, fuels, fire behavior as well as daily, weekly and monthly fire weather/fire danger outlooks.
- Logistics/Dispatch provides detailed operation and information links for aviation, crews, equipment and overhead, including Incident Management Teams.
- Administrative provides fire and incident management tools and links including policies and reports, business management, safety, software applications, and training.
- Related Links component provides links to related Internet websites within the Northern Rockies Area and nationally.

BULLETIN BOARD

SITUATION

PREPAREDNESS LEVELS
Northern Rockies PL: 1
National PL: 1

Situation Reports

Year-to-Date & Historical Wildfire Data

••• Restrictions & Closures •••

SAFETY ALERTS

NRGA Landscape Mortality Safety Alert
NRGA Landscape Mortality Pocket Card

Coal Seam Fires Safety

COOPERATING FEDERAL, STATE AND OTHER AGENCIES IN THE NORTHERN ROCKIES AREA


HAPPY TRAILS!!

Montana Drought and Water Supply

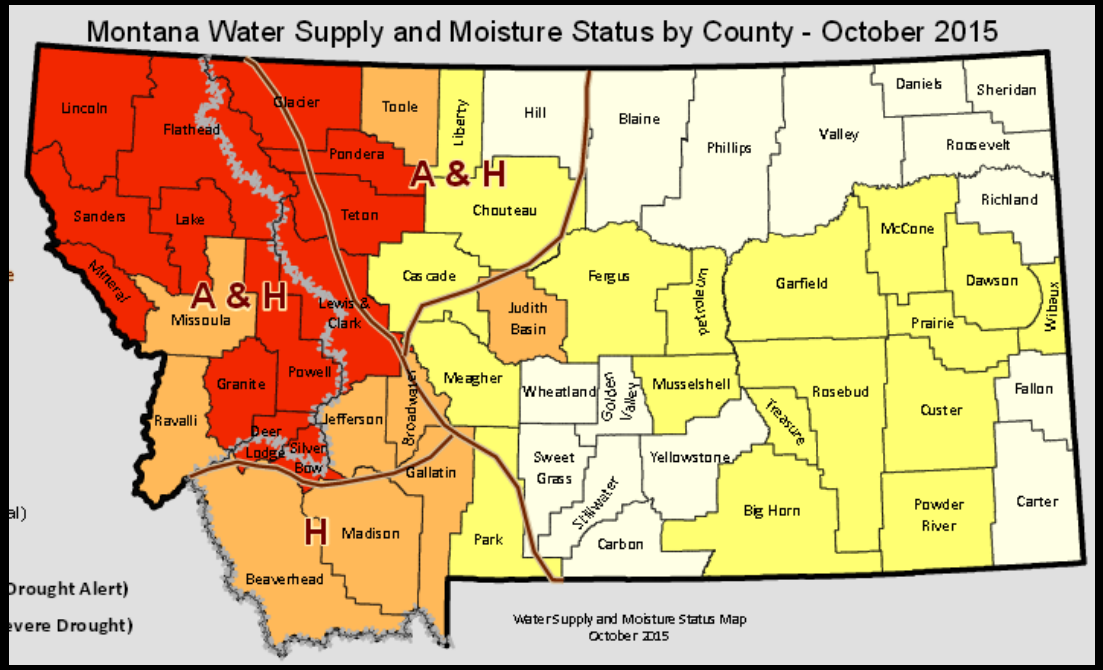
Status change from September to October 2015 – Assessed 10/13/2015

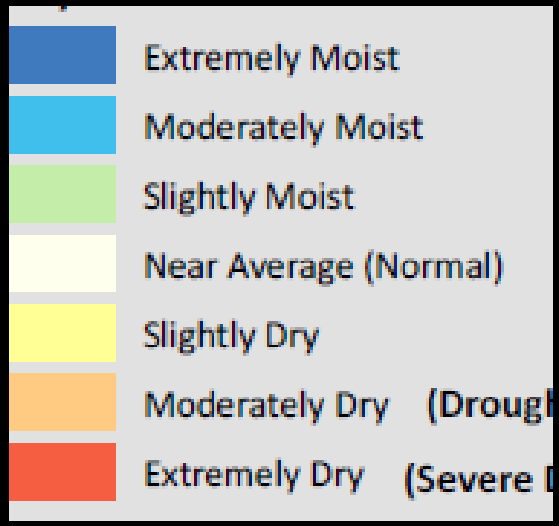
(All changes one category unless otherwise noted)

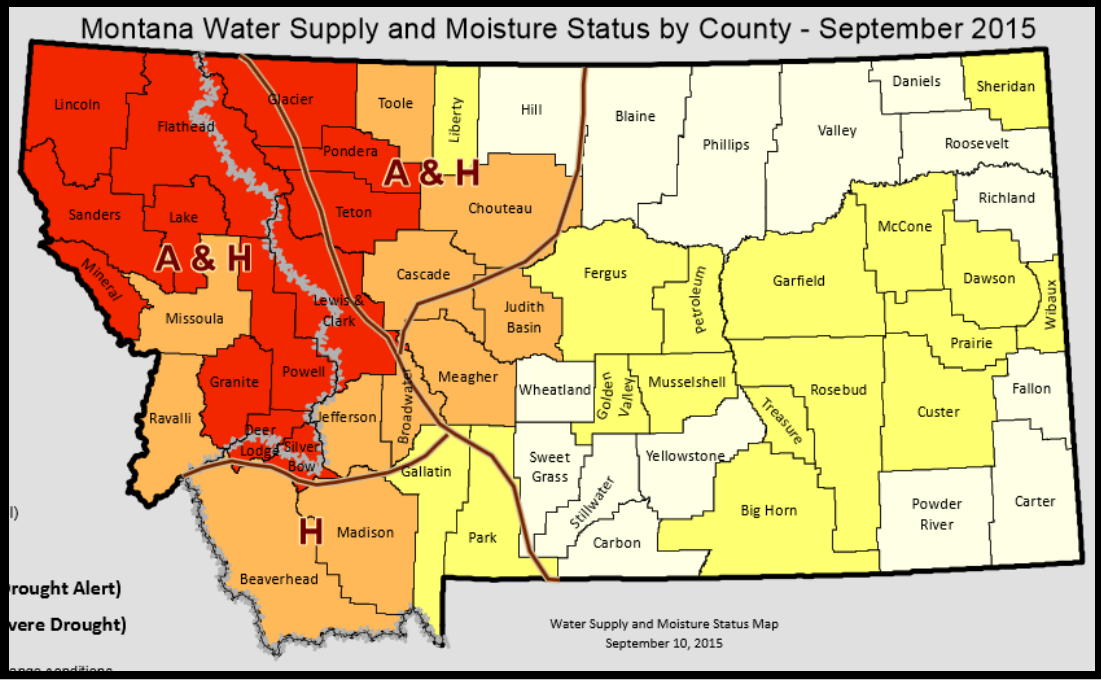
Wetter	No Change				Drier
Chouteau	Lincoln	Glacier	Blaine	Wibaux	Gallatin
Cascade	Flathead	Pondera	Phillips	Wheatland	Powder River
Meagher	Sanders	Teton	Valley	Musselshell	
Golden Valley	Lake	Lewis and Clark	Daniels	Sweet Grass	
Sheridan	Mineral	Toole	Roosevelt	Stillwater	
	Missoula	Liberty	Judith Basin	Carbon	
	Powell	Jefferson	Fergus	Yellowstone	
	Ravalli	Broadwater	Petroleum	Big Horn	
	Granite	Beaverhead	Garfield	Treasure	
	Deer Lodge	Madison	McCone	Rosebud	
	Silver Bow	Park	Richland	Custer	
		Hill	Dawson	Fallon	
			Prairie	Carter	

Montana Drought Status

October 2015 vs. September 2015







Montana Drought & Water Supply Advisory Committee

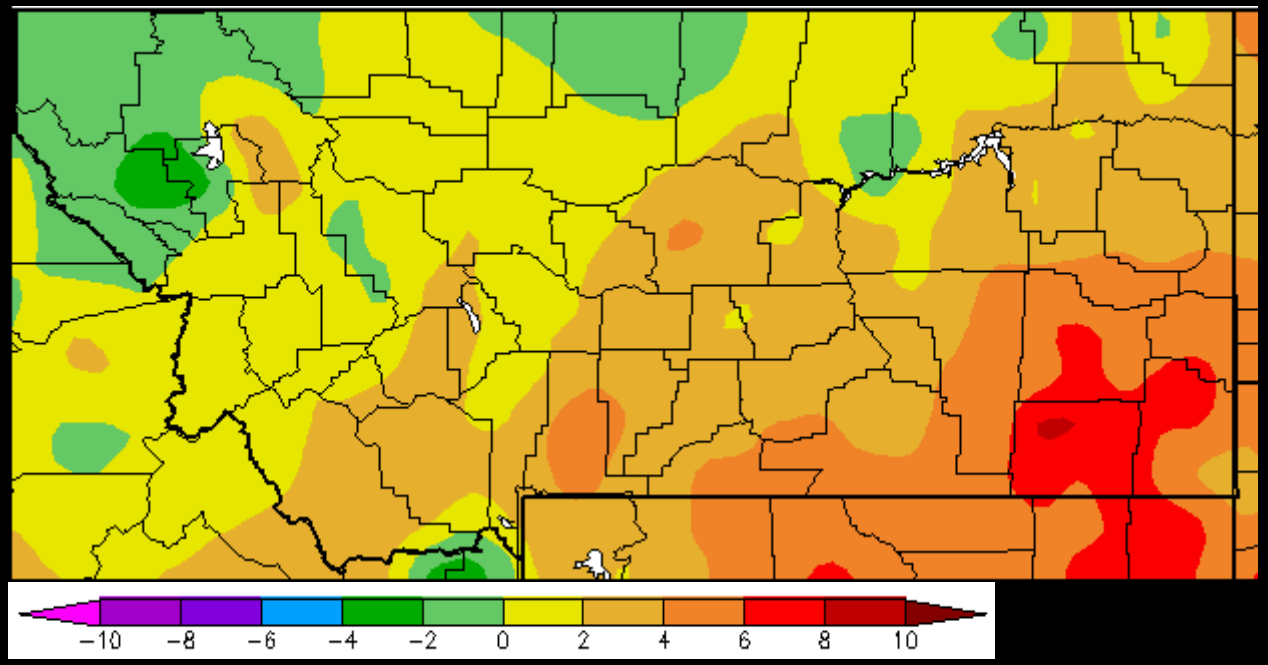
October 15, 2015

National Weather Service

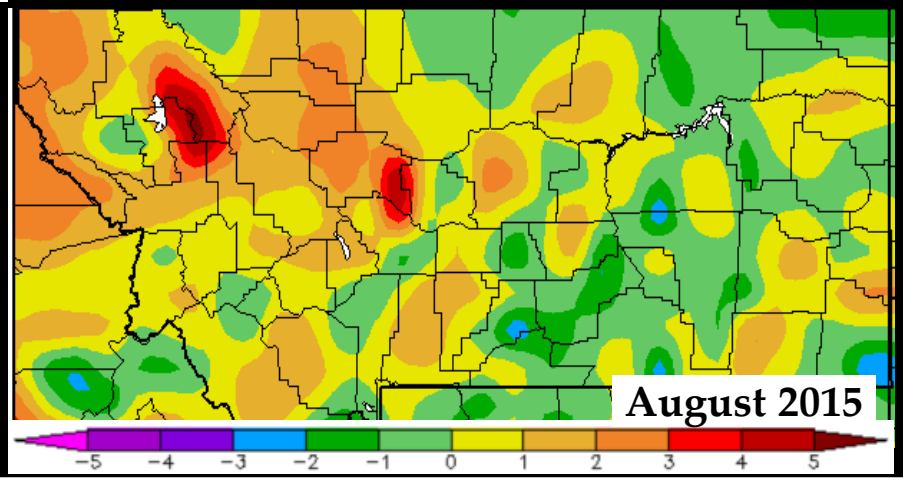
Gina Loss – Service Hydrologist

Departure from Average Temperature

September 2015

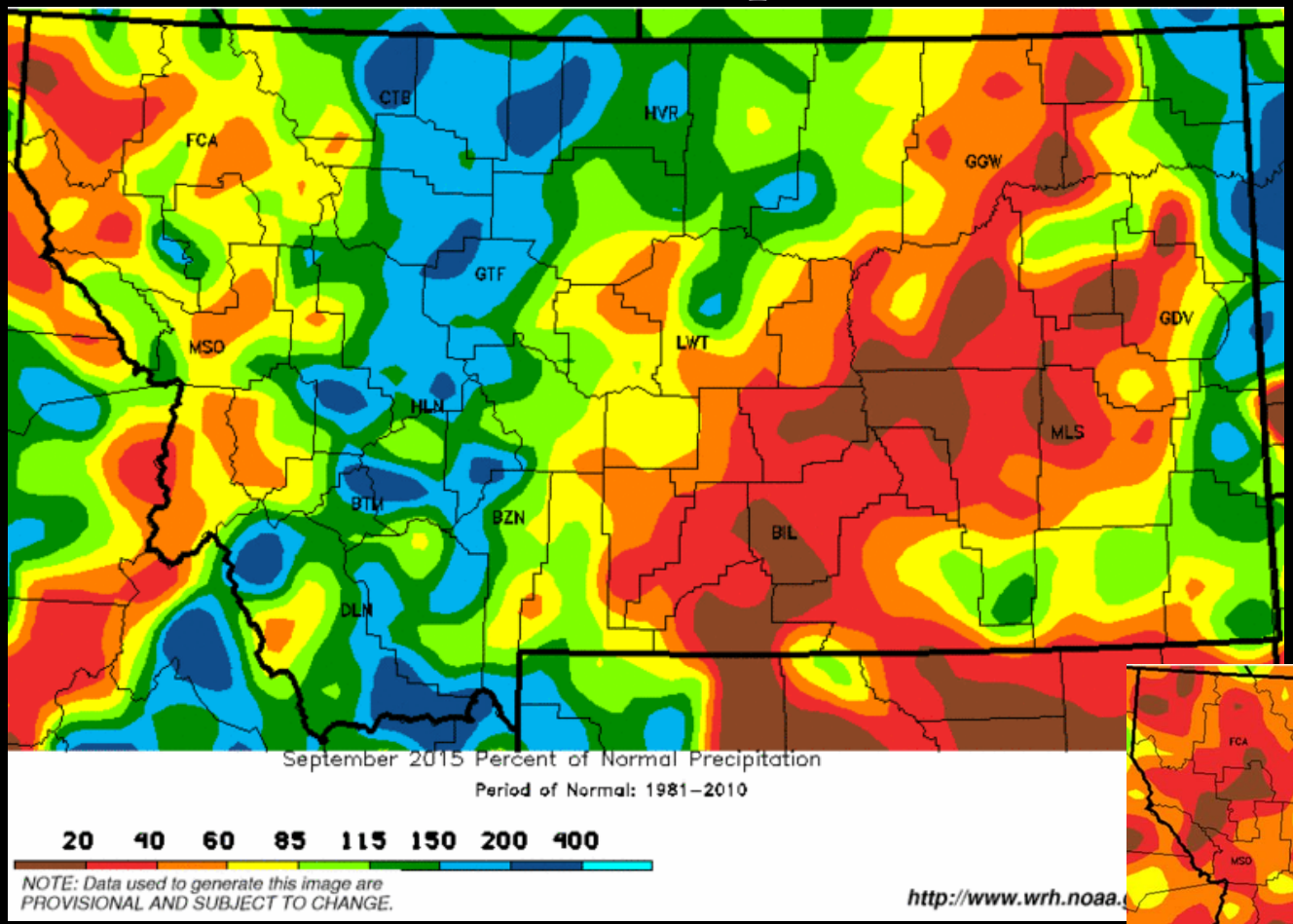


- Mostly near average over northwest half
- Southeast half 2 to 8 °F above average

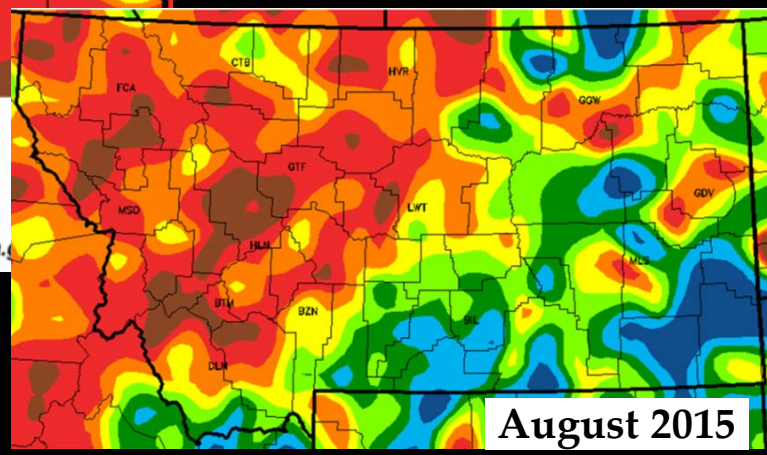


Percent of Average Precipitation

September 2015

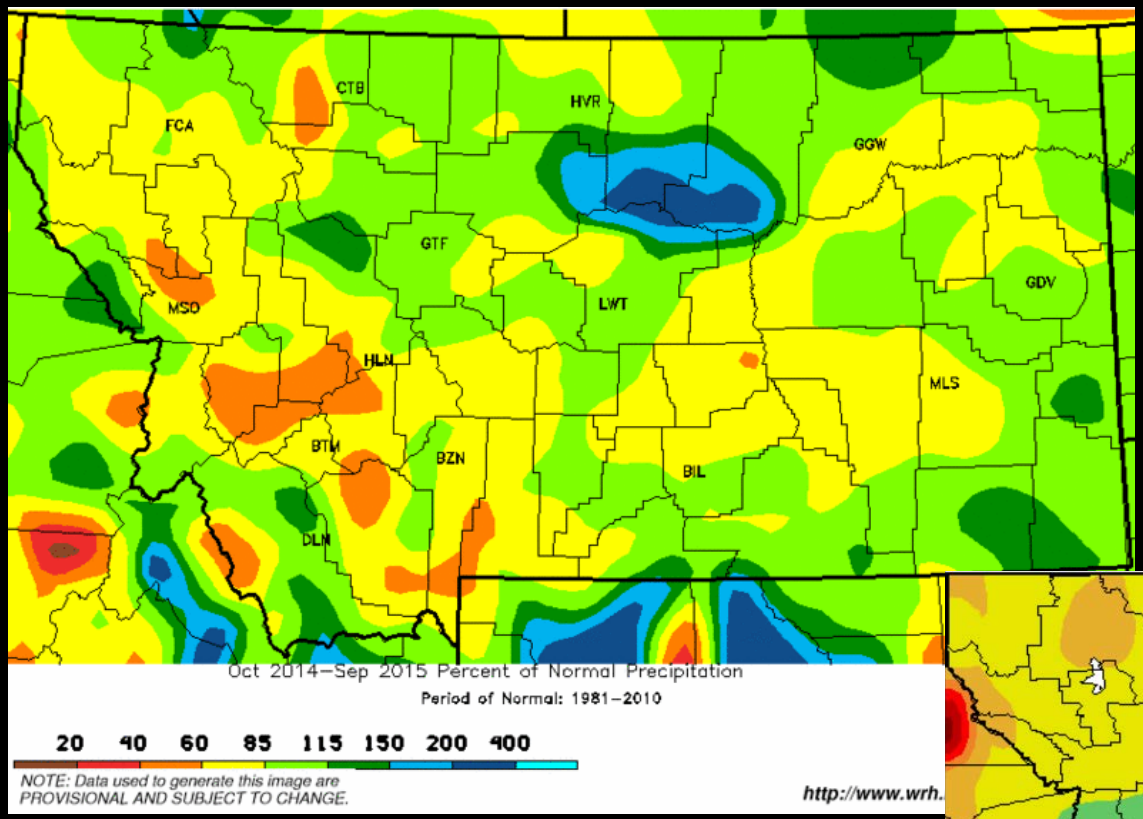


- Rocky Mountain Front and adjacent plains… above to well above average
- West of Continental Divide and eastern plains… below to well below average

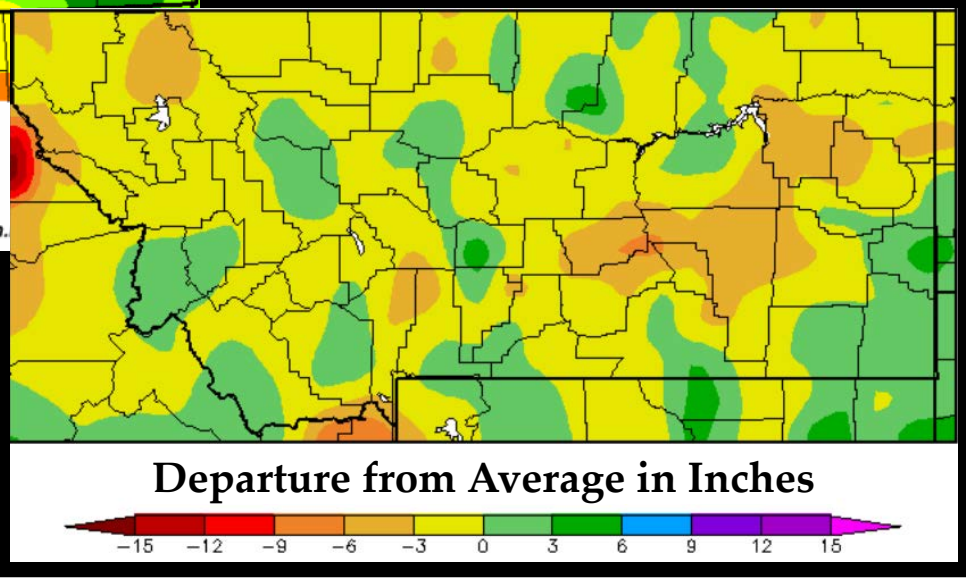


Percent of Normal Precipitation

Water Year 2015

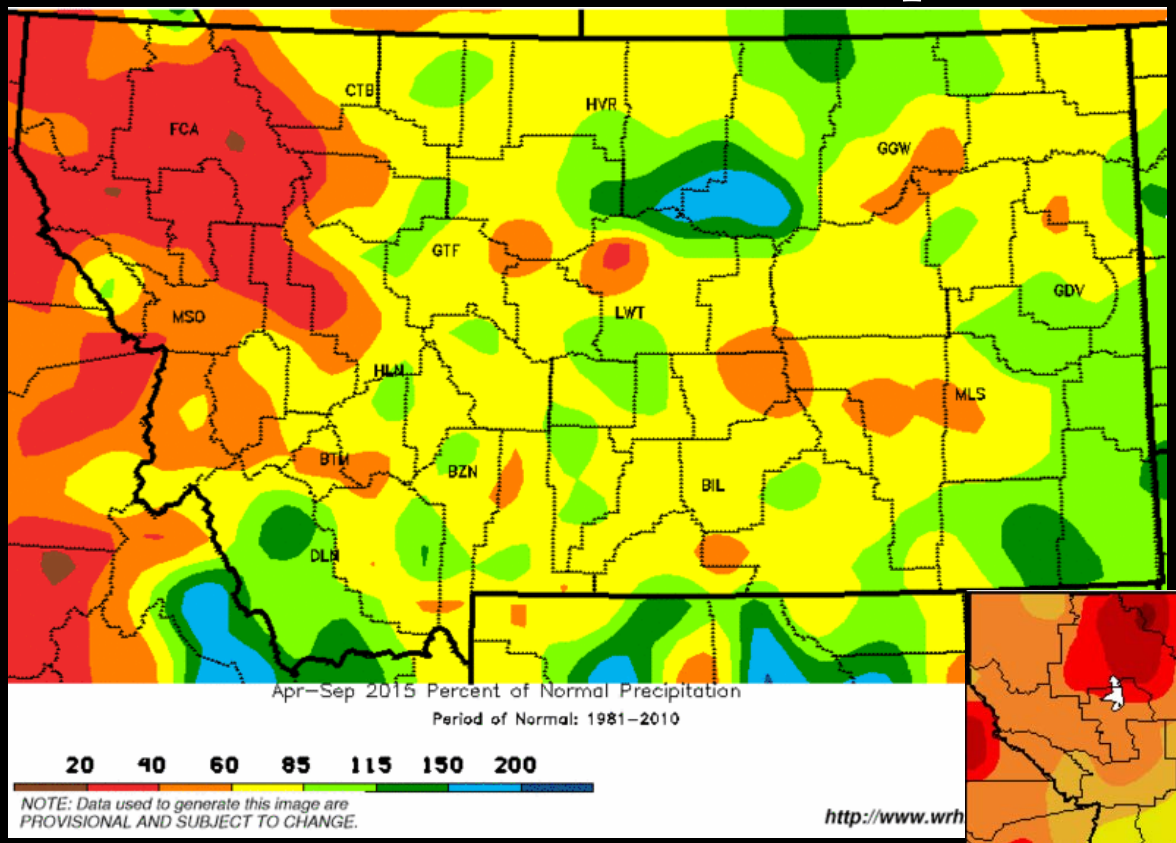


- October - September
- Mostly near to below average
- West and southwest has areas well below average
- Area in central Montana well above average
- Areas northwest and south-central to east with 3 – 6 inch deficits

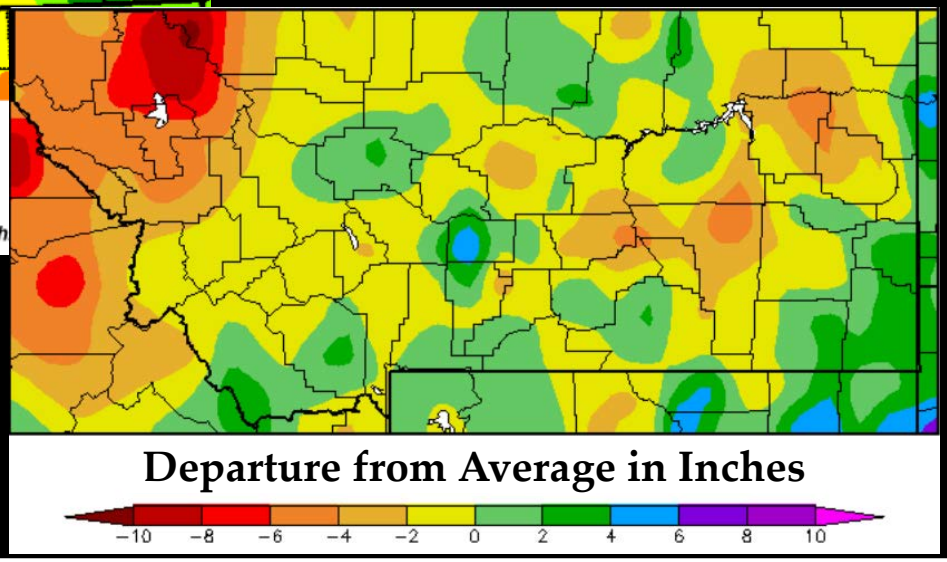


Percent of Normal Precipitation

Crop Year

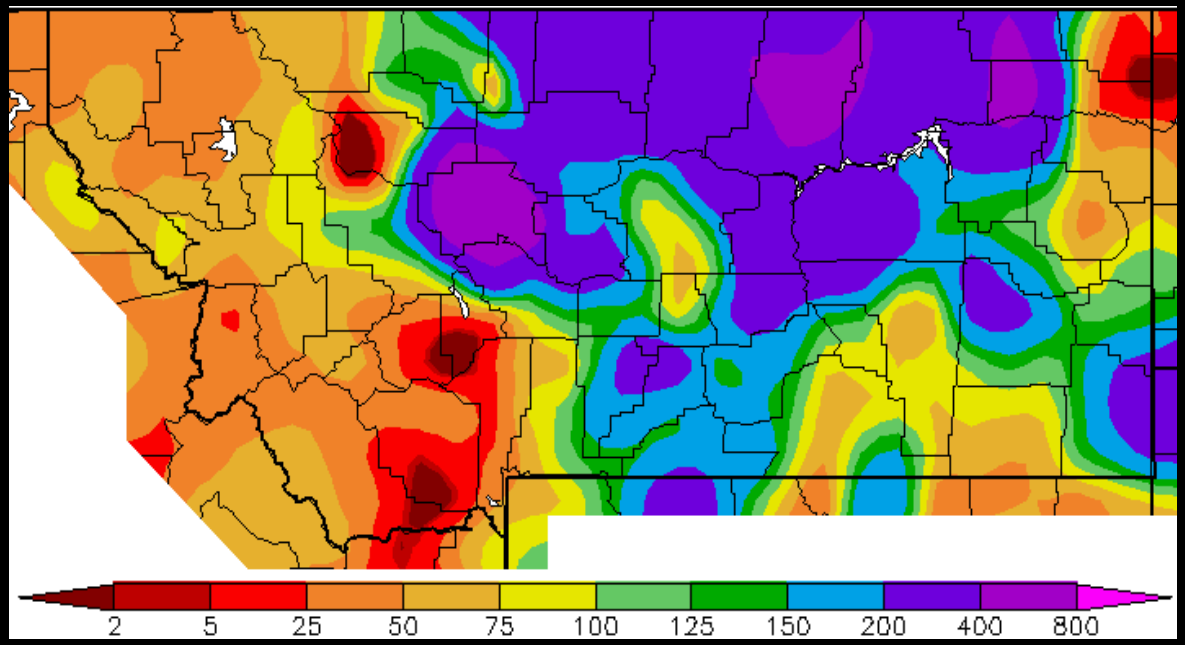


- April - September
- West well below average
  - Areas with 6 – 10 inch deficits
- Remainder of state mostly near to below average
  - Areas south-central and east with 2 – 6 inch deficits
- Some improvement along Rocky Mountain Front

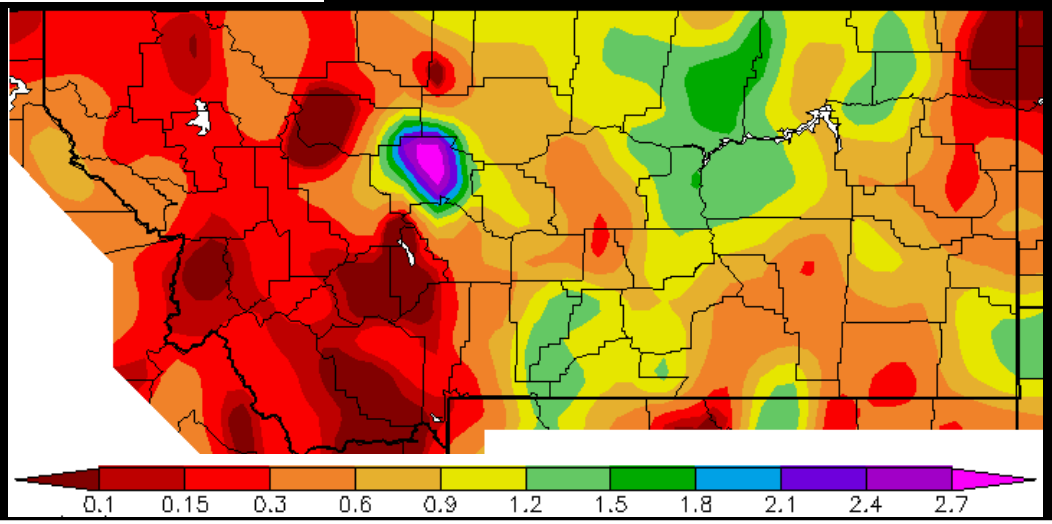


Percent of Average and Total Precipitation

October 1-12

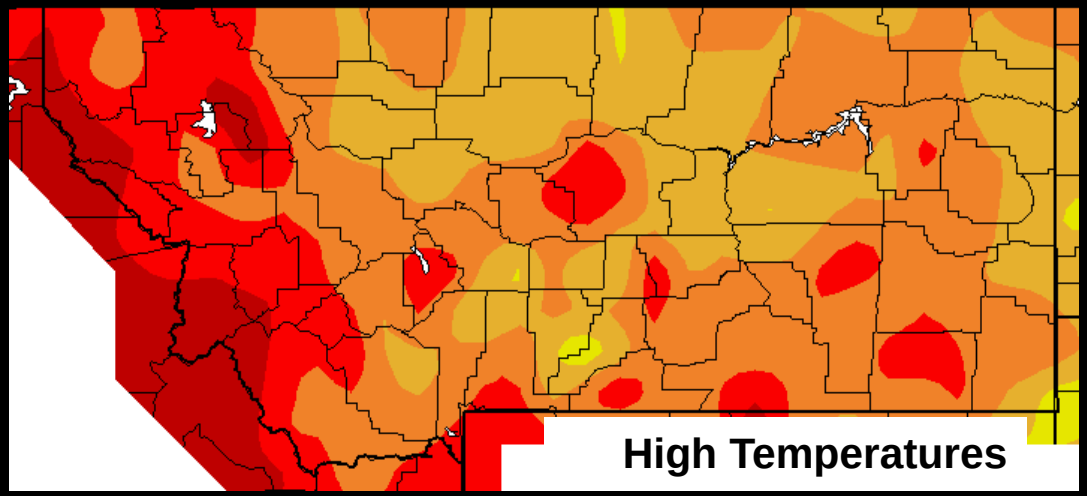


- Well below average west, southwest, and northeast
- Well above average north-central, northeast, central, and portions of south-central and southeast
- Sites in/near Great Falls 2-3 inches October
  - 4th wettest for Great Falls even with no more precipitation

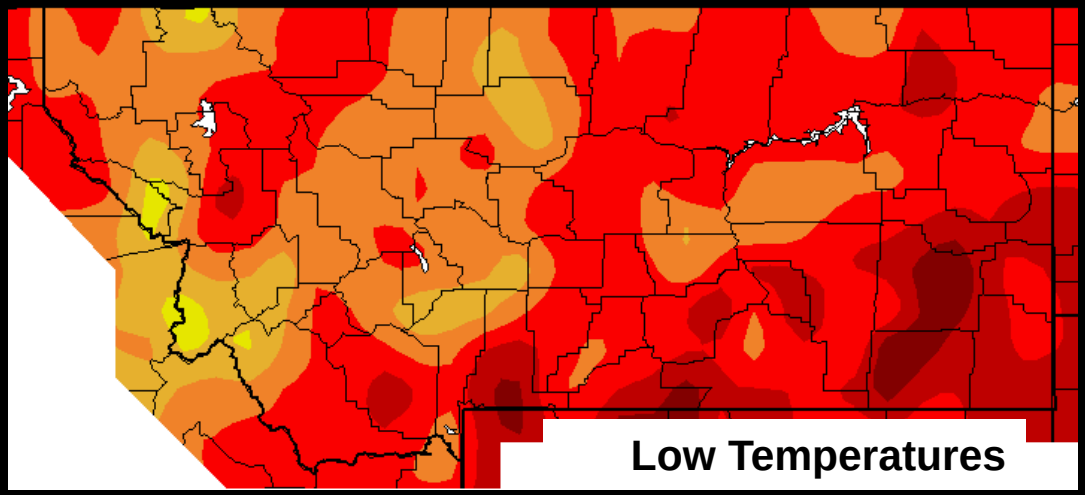


Departure from Average Temperatures

October



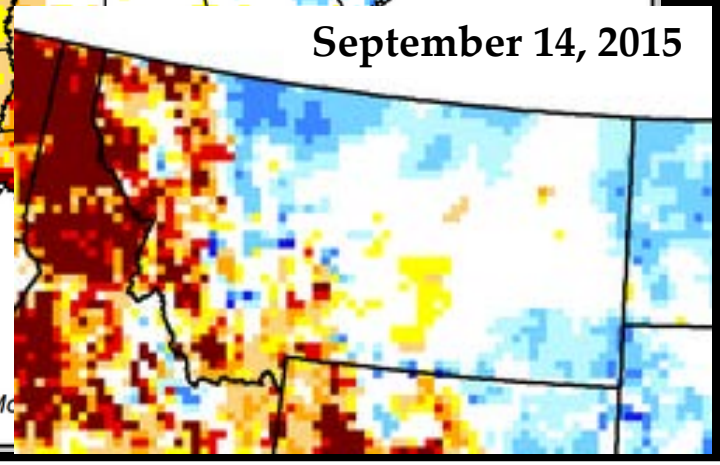
- High temperatures above average statewide
  - Areas west and south 6-10 °F above average
- Lows temperatures above average statewide
  - South-central and southeast 4-6 °F above average



GRACE-Based Root Zone Soil Moisture Drought Indicator

October 12, 2015

Top 1 Meter



Wetness percentiles are relative to the period 1948-2012

The rootzone is defined as the top 1 meter of soil

Cell Resolution 0.125 degrees

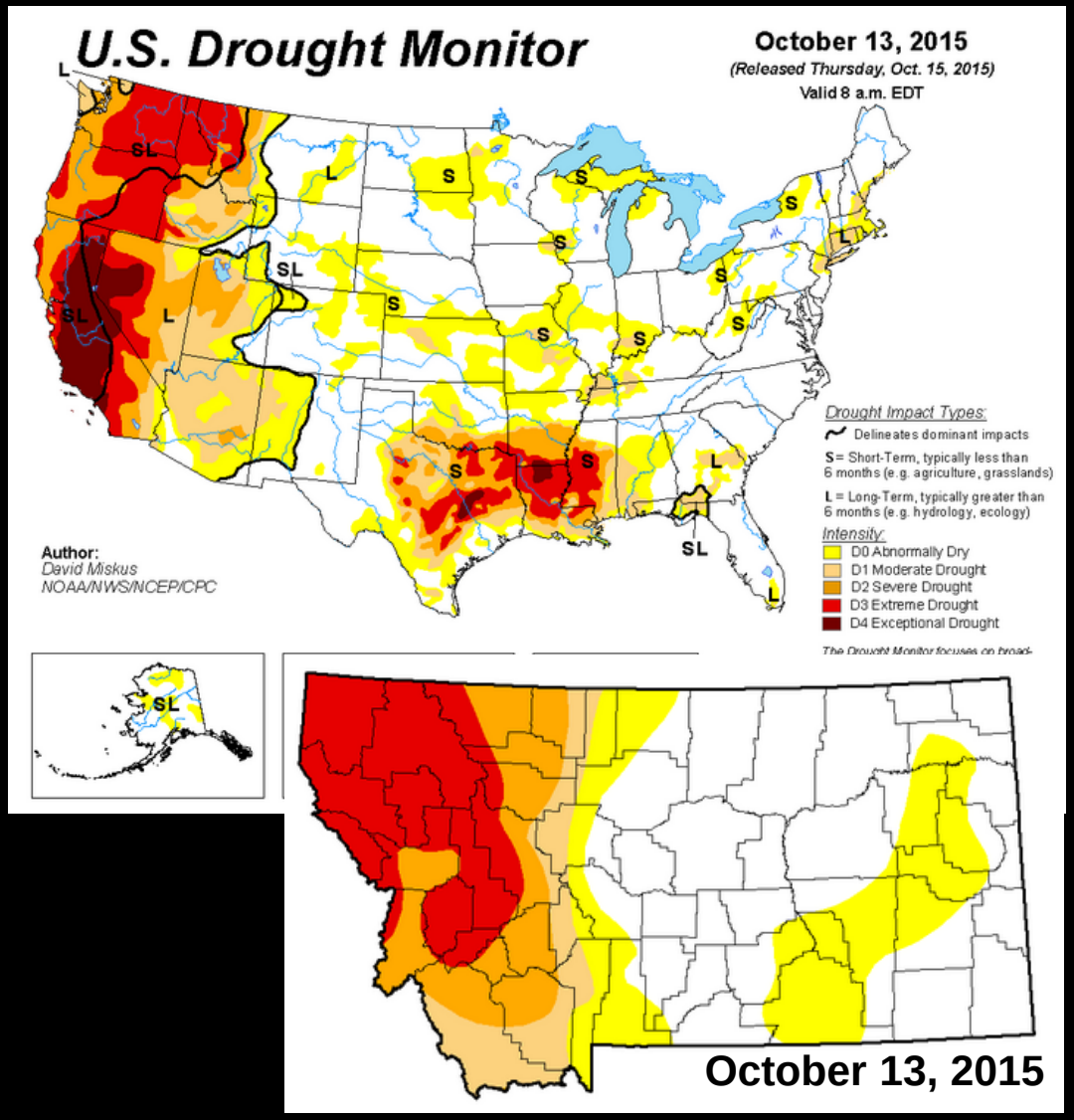
Projection of this document is Lambert Azimuthal Equal Area

2 5 10 20 30 70 80 90 95 98

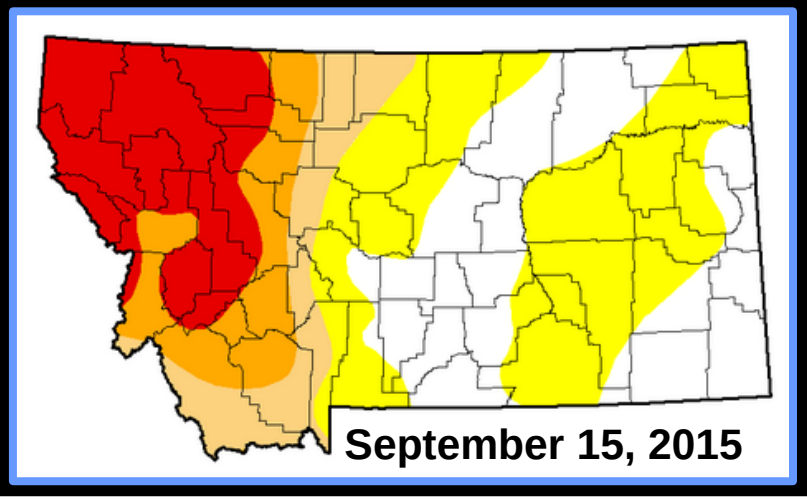
Wetness Percentile

http://drought.unl.edu/M

National Drought Monitor
Issued October 15



- Slight improvement along fringes of drought areas



North American Drought Monitor

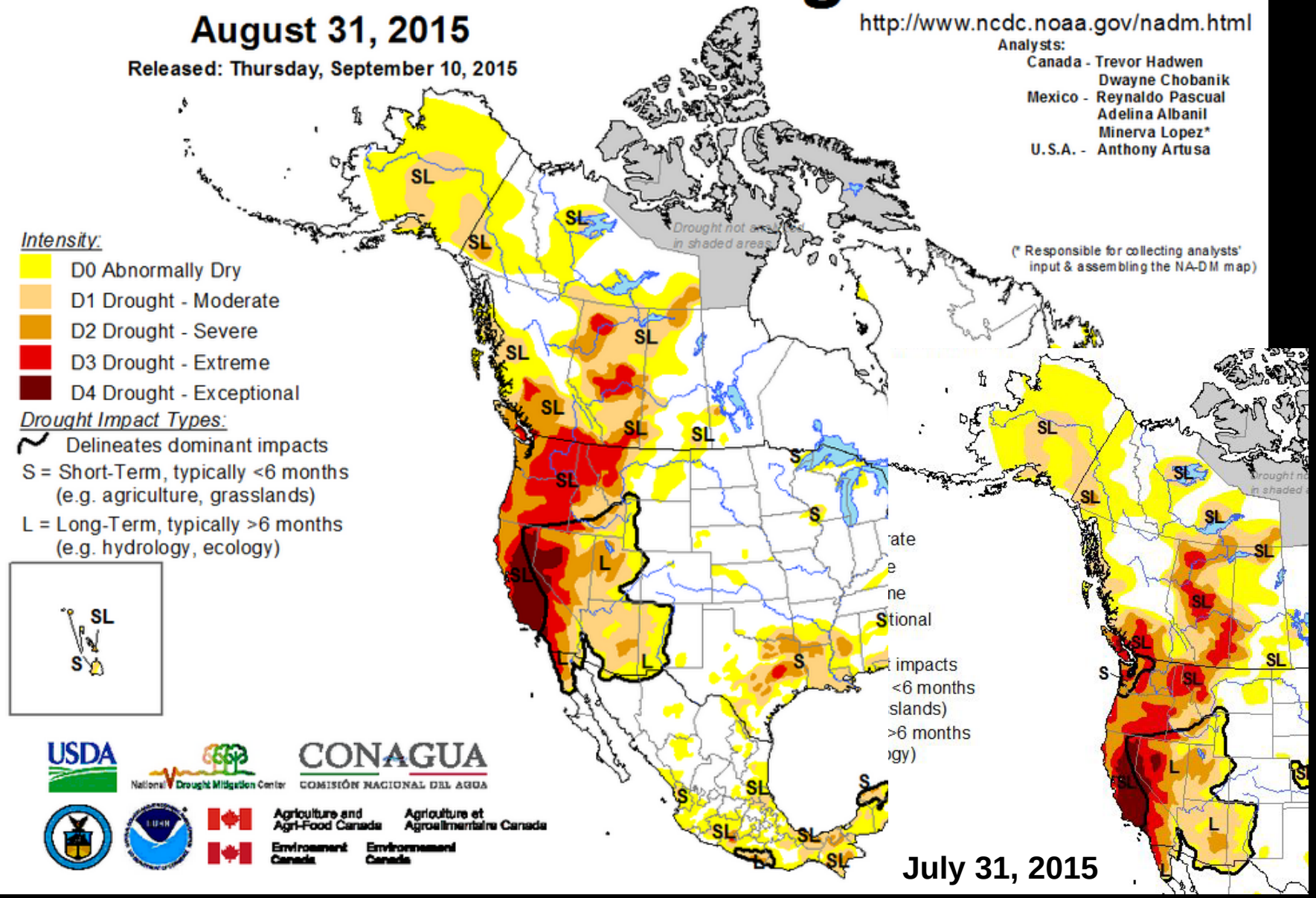
August 31, 2015

Released: Thursday, September 10, 2015

http://www.ncdc.noaa.gov/nadm.html

Analysts:
Canada - Trevor Hadwen
Dwayne Chobanik
Mexico - Reynaldo Pascual
Adelina Albanil
Minerva Lopez*
U.S.A. - Anthony Artusa

(* Responsible for collecting analysts' input & assembling the NA-DM map)



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

Delineates dominant impacts

S = Short-Term, typically <6 months (e.g. agriculture, grasslands)

L = Long-Term, typically >6 months (e.g. hydrology, ecology)

USDA | National Drought Mitigation Center | CONAGUA Comisión Nacional del Agua

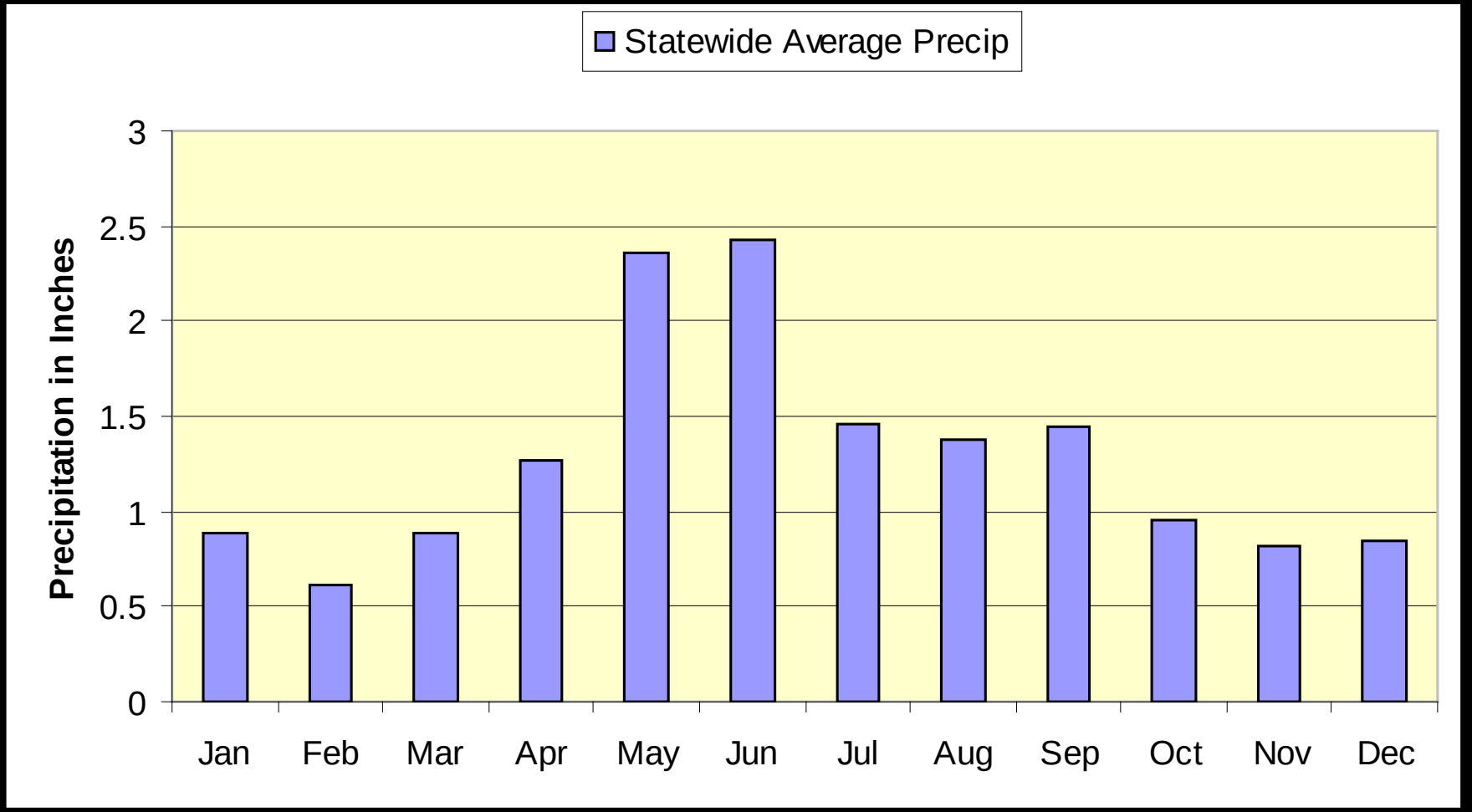
Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

Environment Canada | Environnement Canada

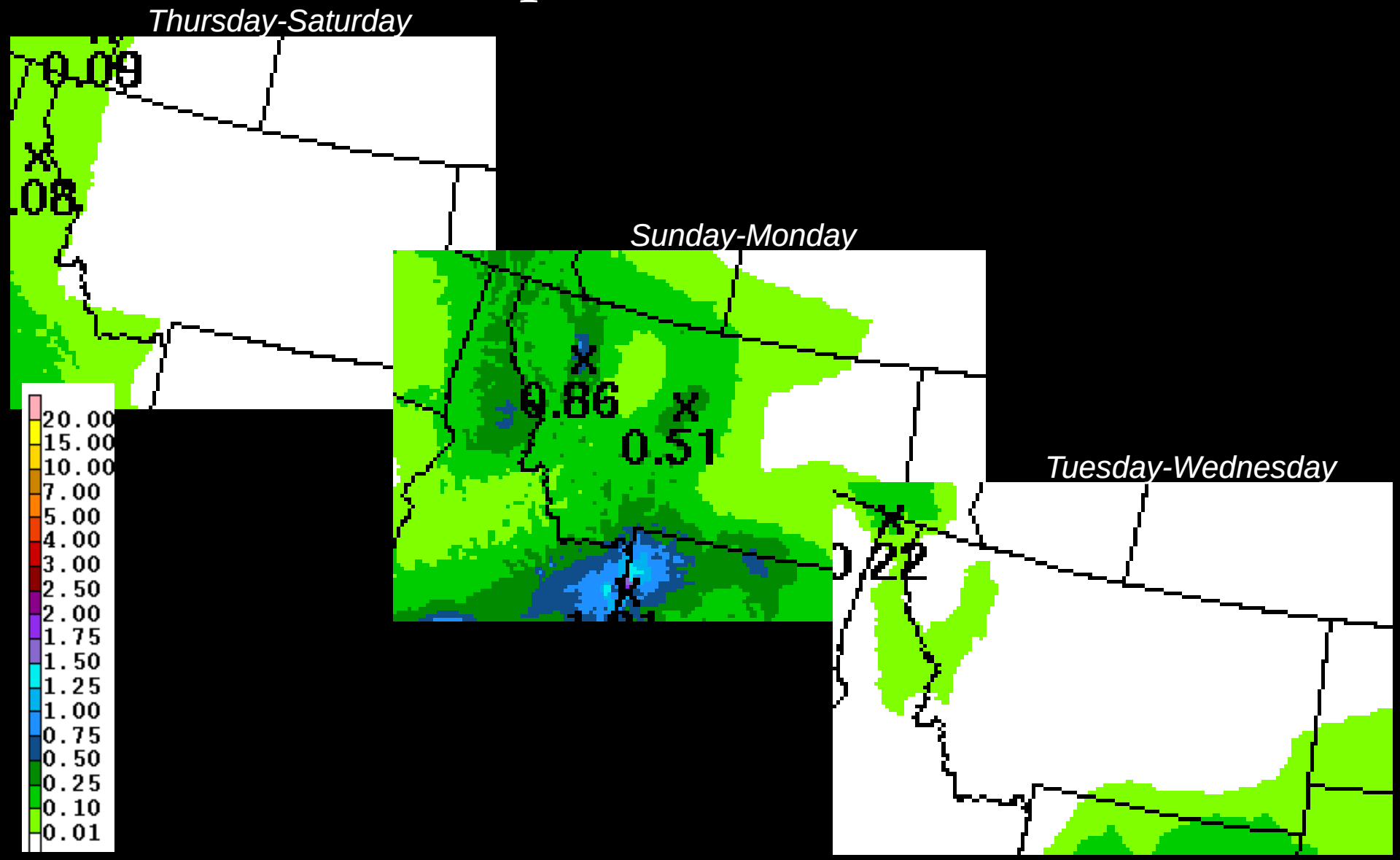
July 31, 2015

Statewide Average Precipitation

October beginning of drier fall/winter months

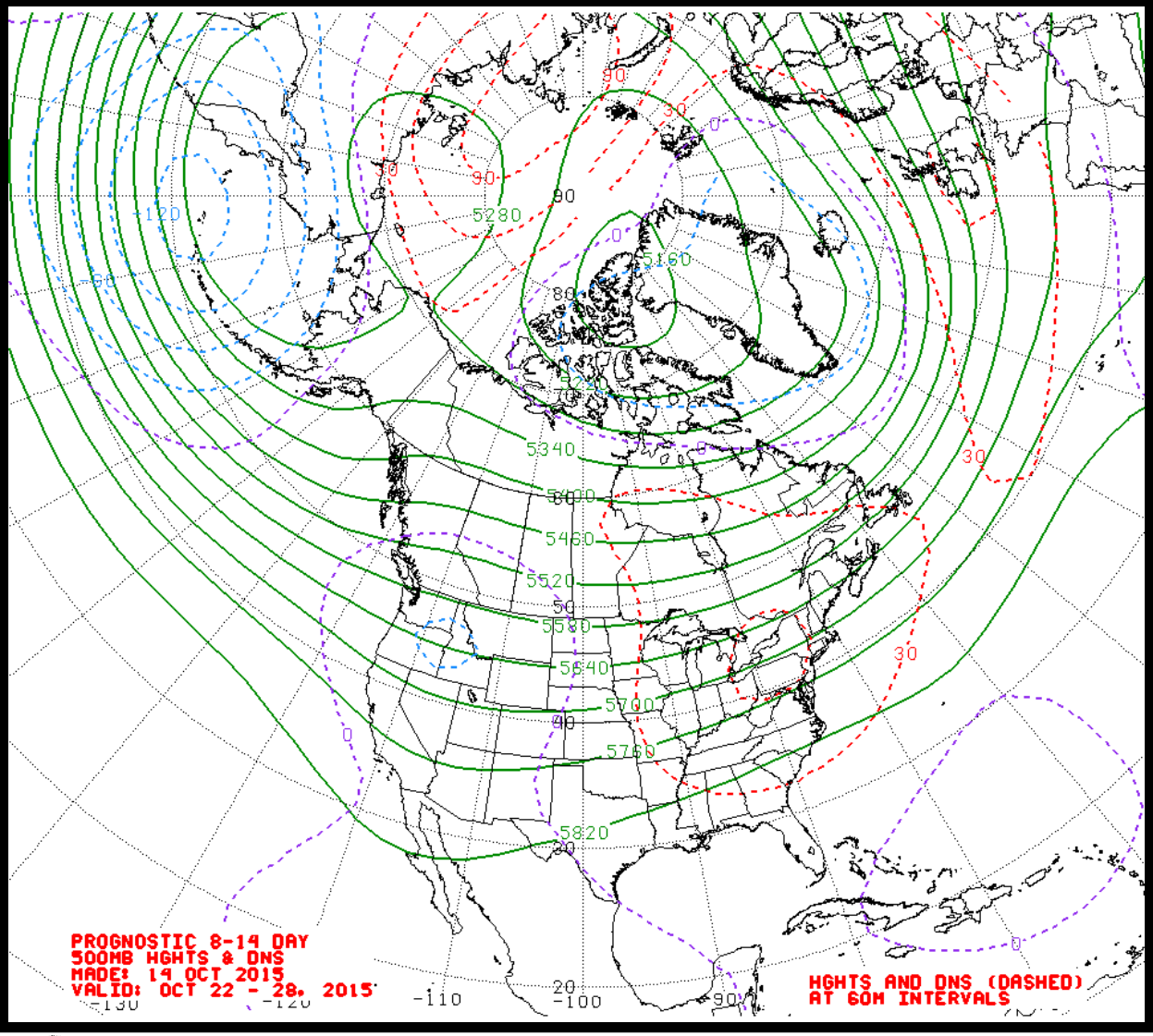


Precipitation Forecast



8 to 14 Day Outlook

500mb Heights and Anomalies

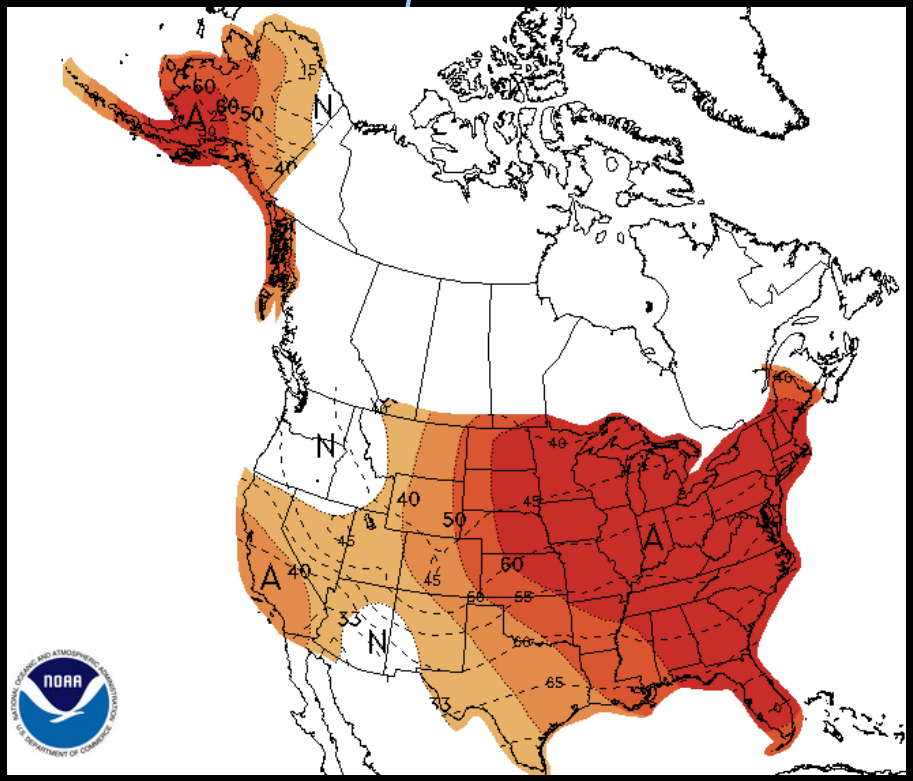


- October 22 - 28
- Westerly flow into Pacific Northwest and Montana

8 to 14 Day Outlook

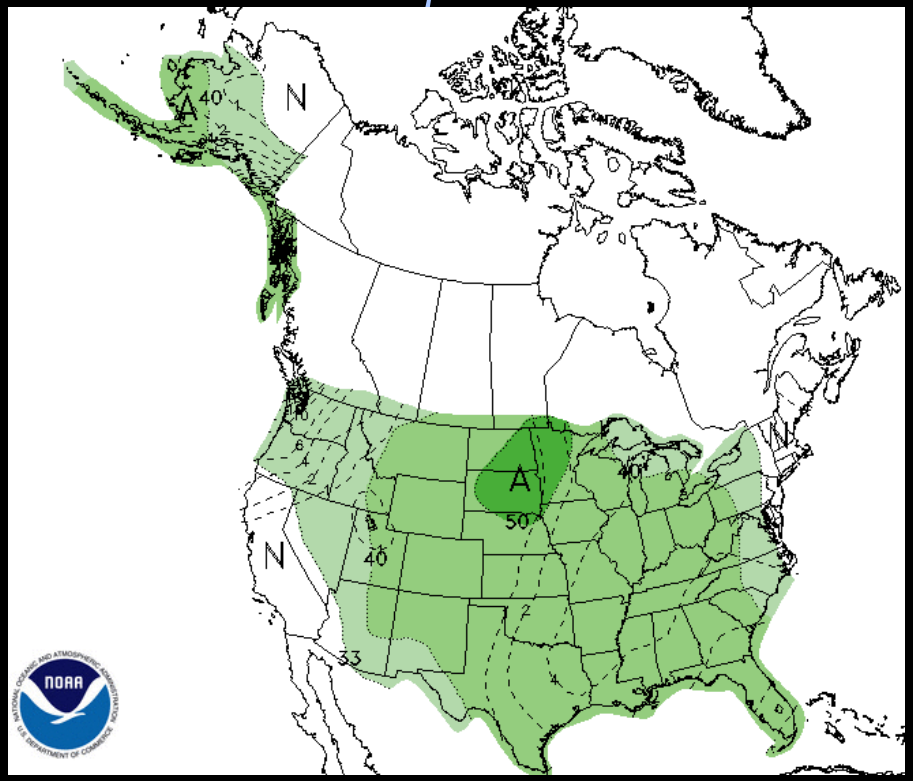
October 22 - 28

Temperature



- 33% to 50% chance temperatures will average above normal across Montana east of the Divide
- Equal chances for above, below or near average temperatures west of the Divide

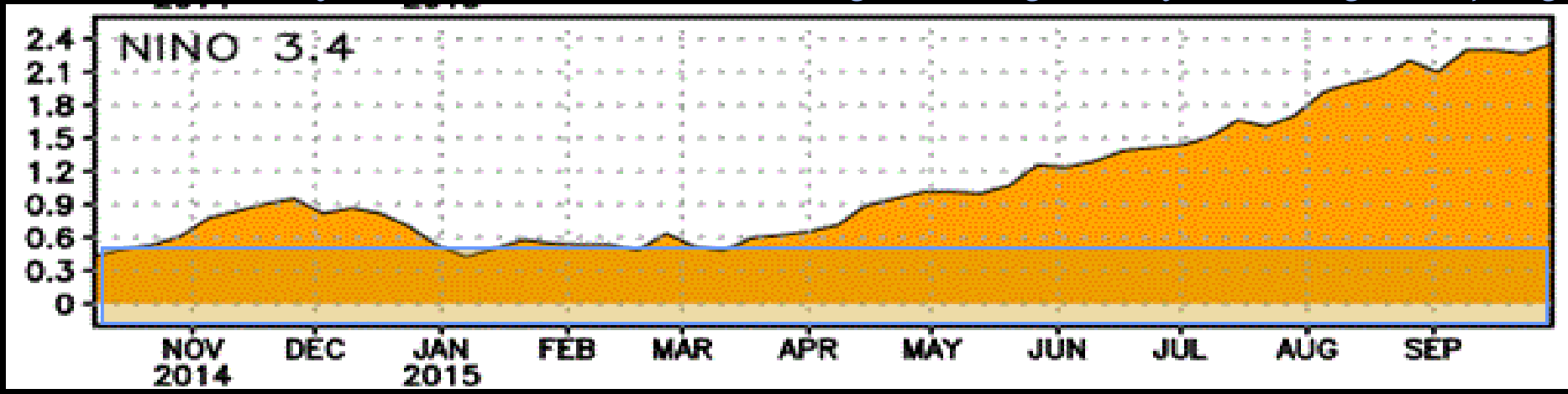
Precipitation

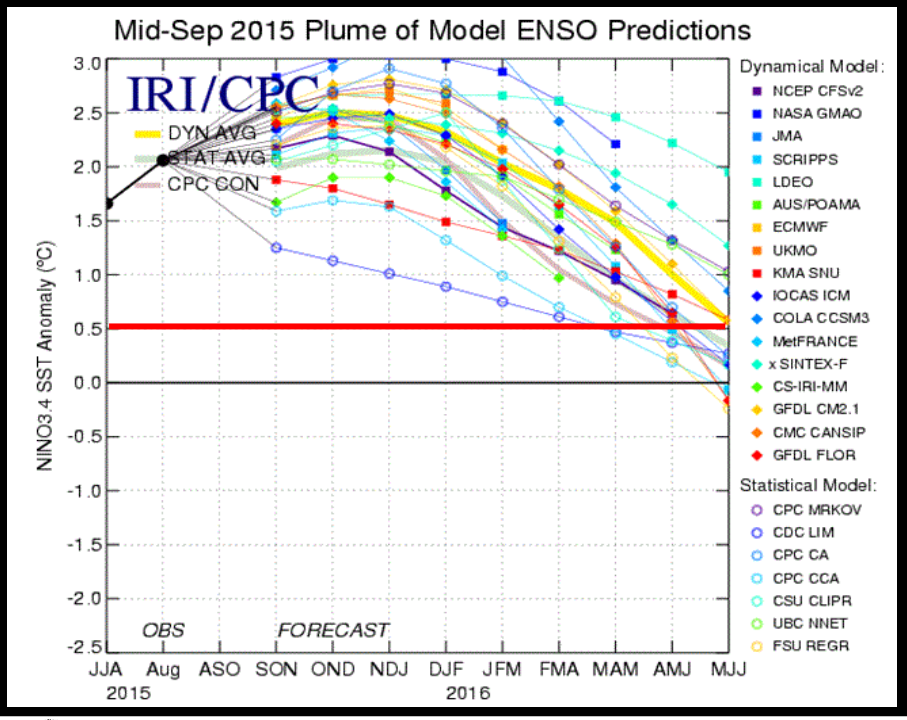


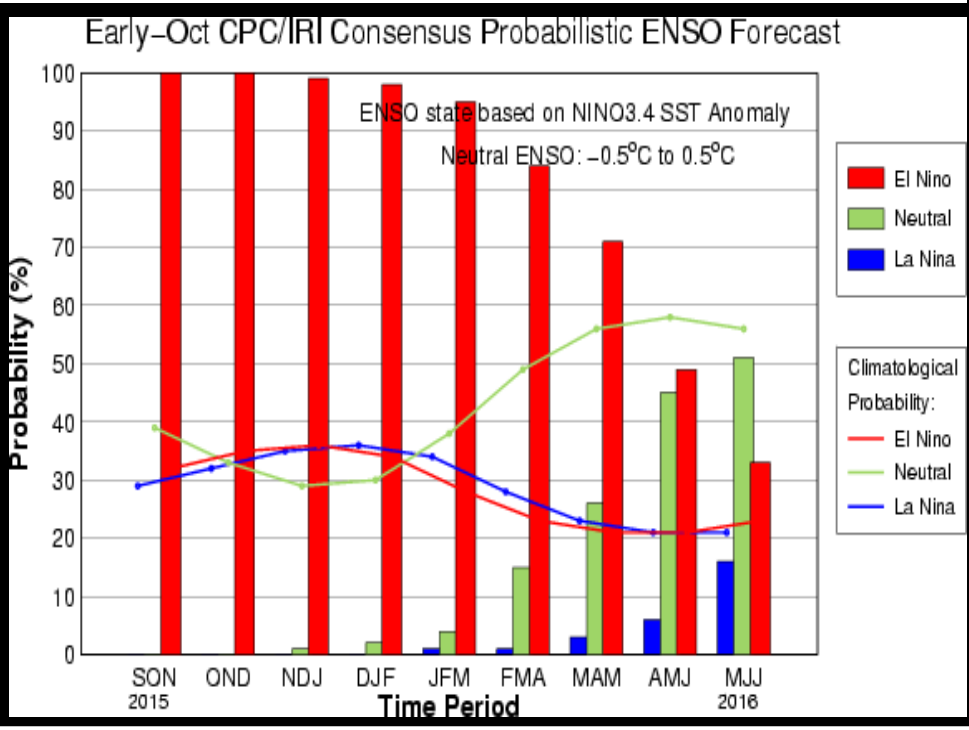
- 33% to 50% chance precipitation will average above normal across Montana

El Niño / La Niña

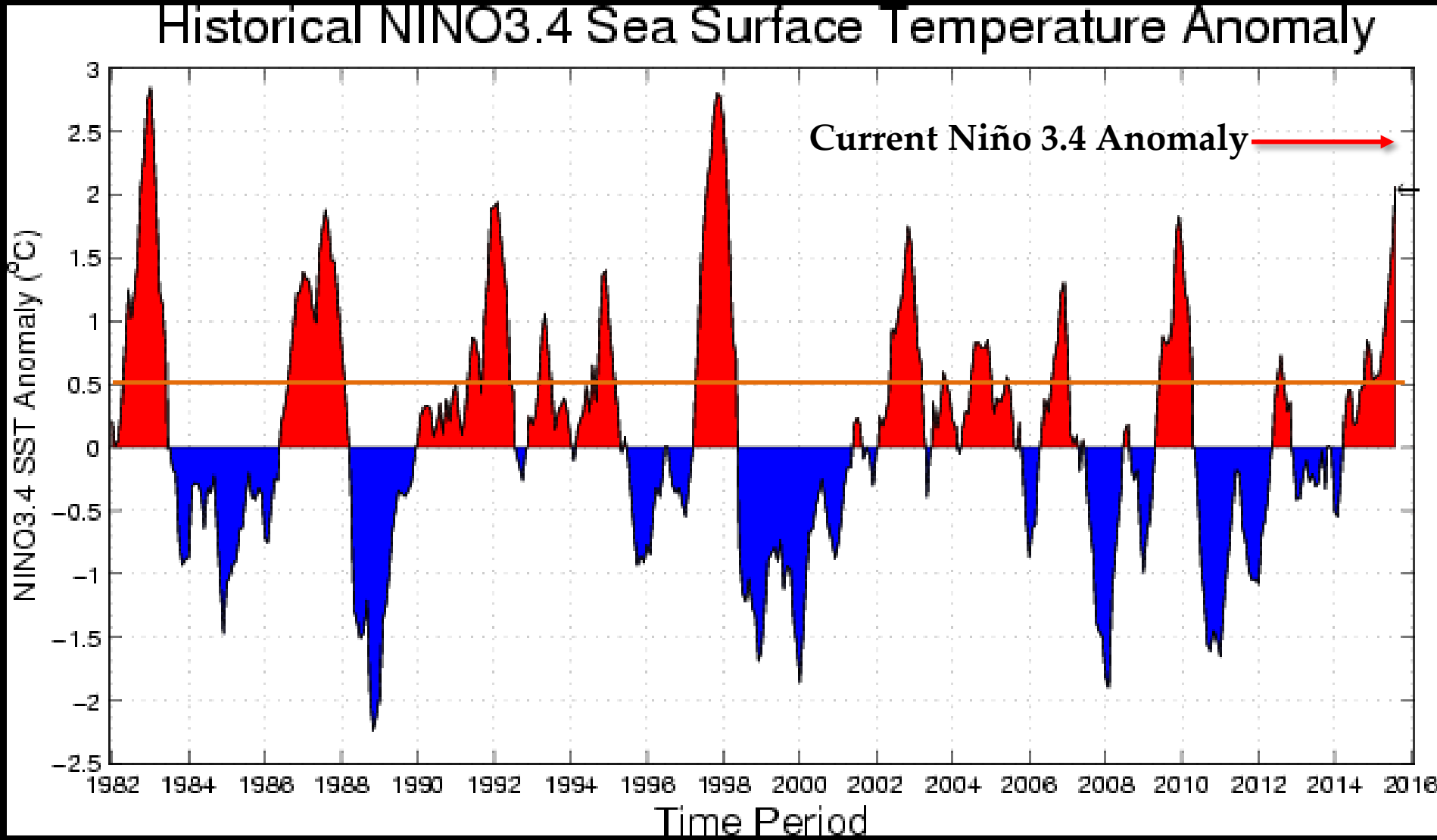
El Niño Advisory: *~95% chance continues through winter, gradually weakening thru spring*







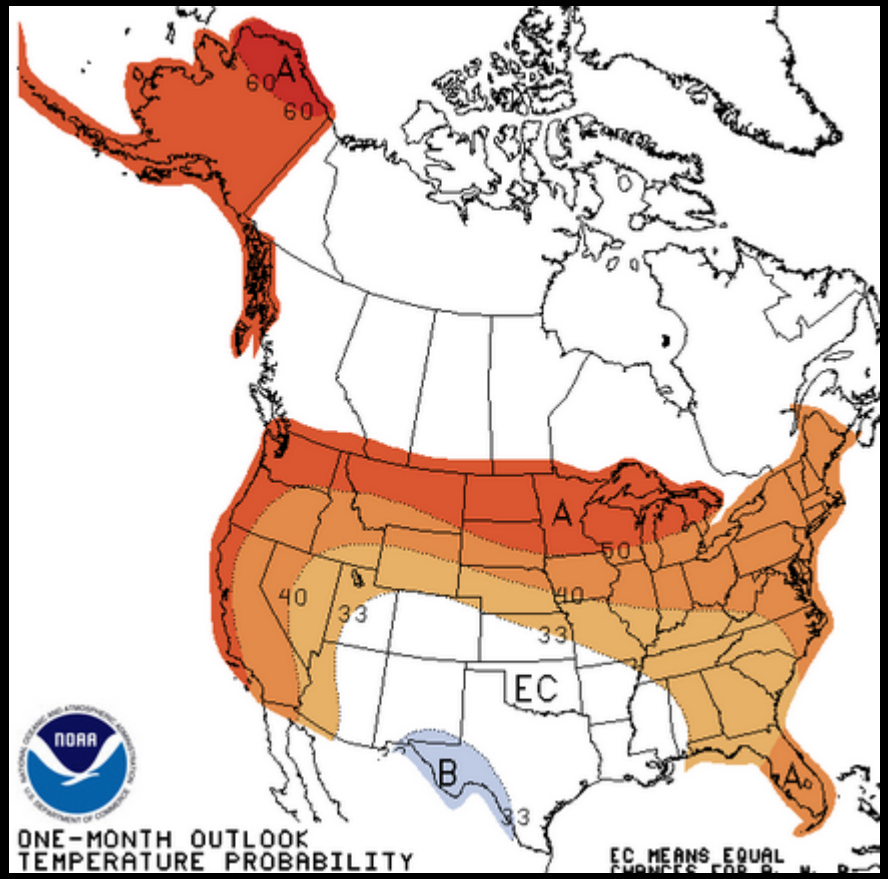
Historical Sea Surface Temperature Anomaly



November Outlook

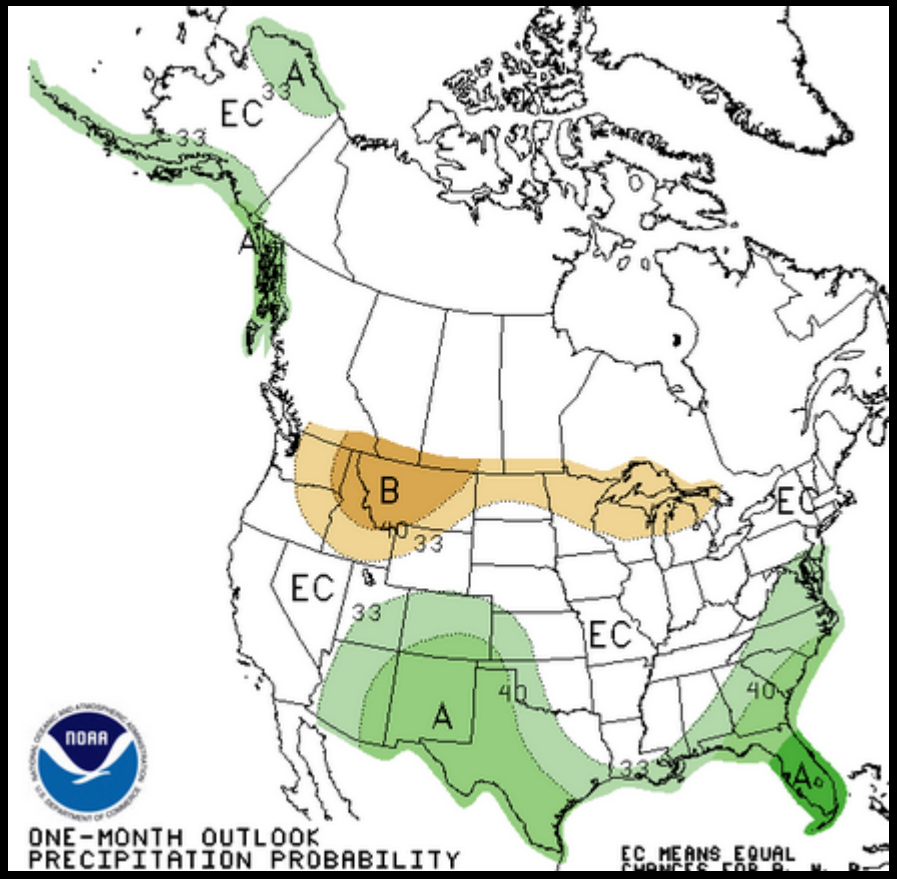
Updated October 15

Temperature



- 40% to 60% chance temperatures will average above normal across Montana

Precipitation

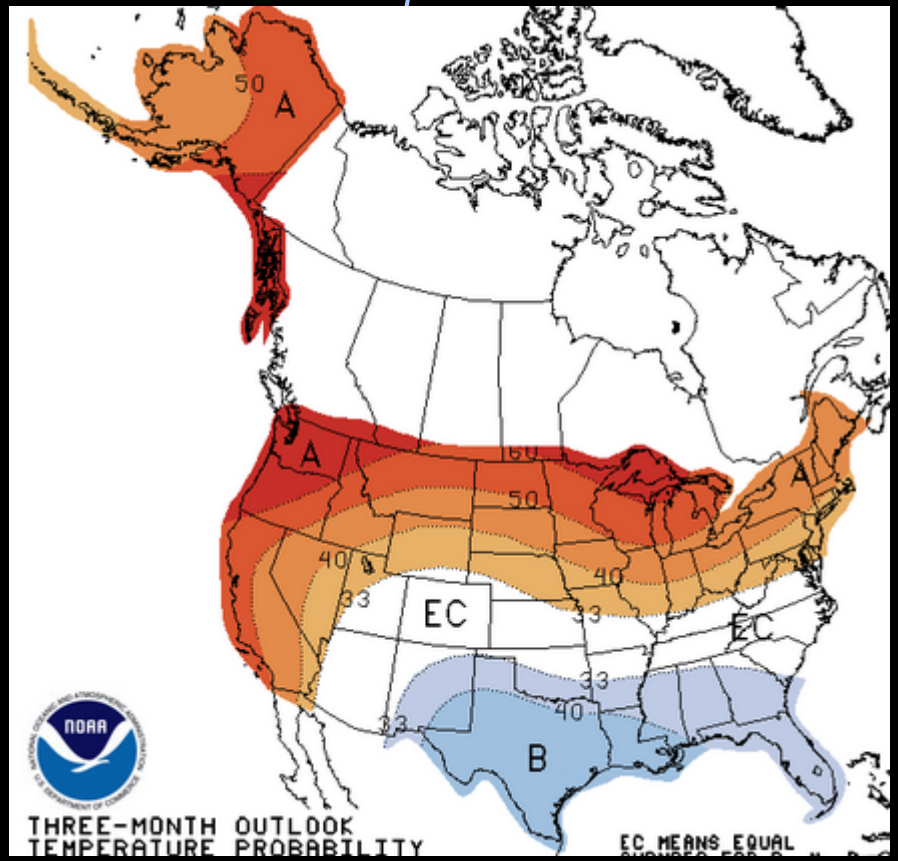


- 33% to 50% chance precipitation will average below normal across Montana

December – February Outlook

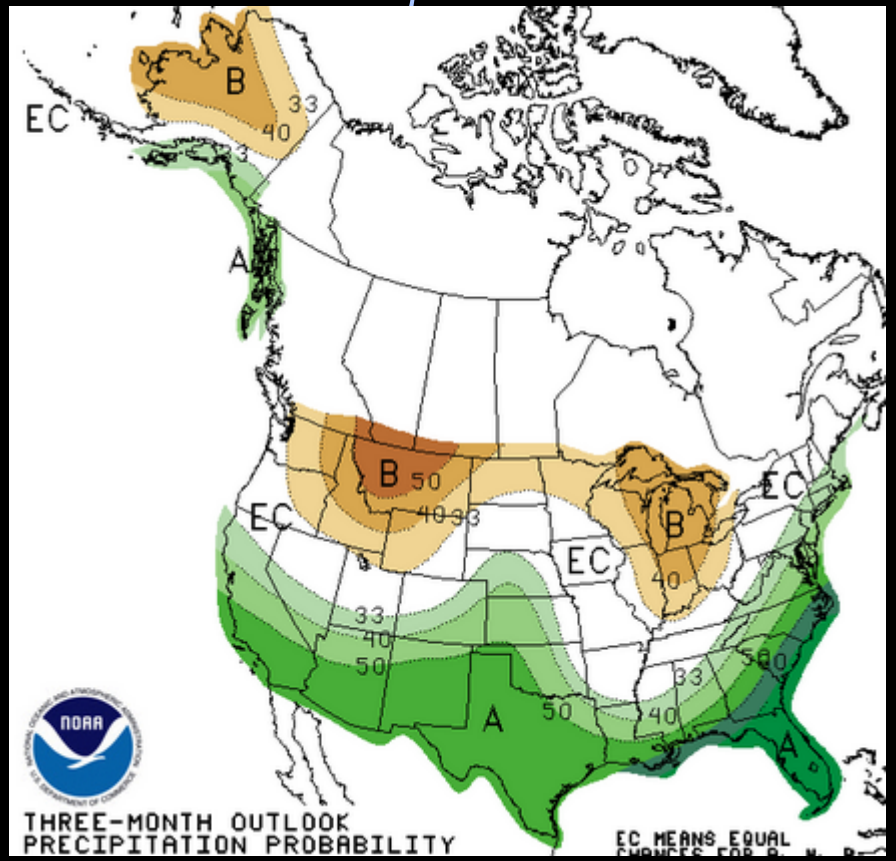
Updated October 15

Temperature



- 40% to 70% chance temperatures will average above normal across Montana

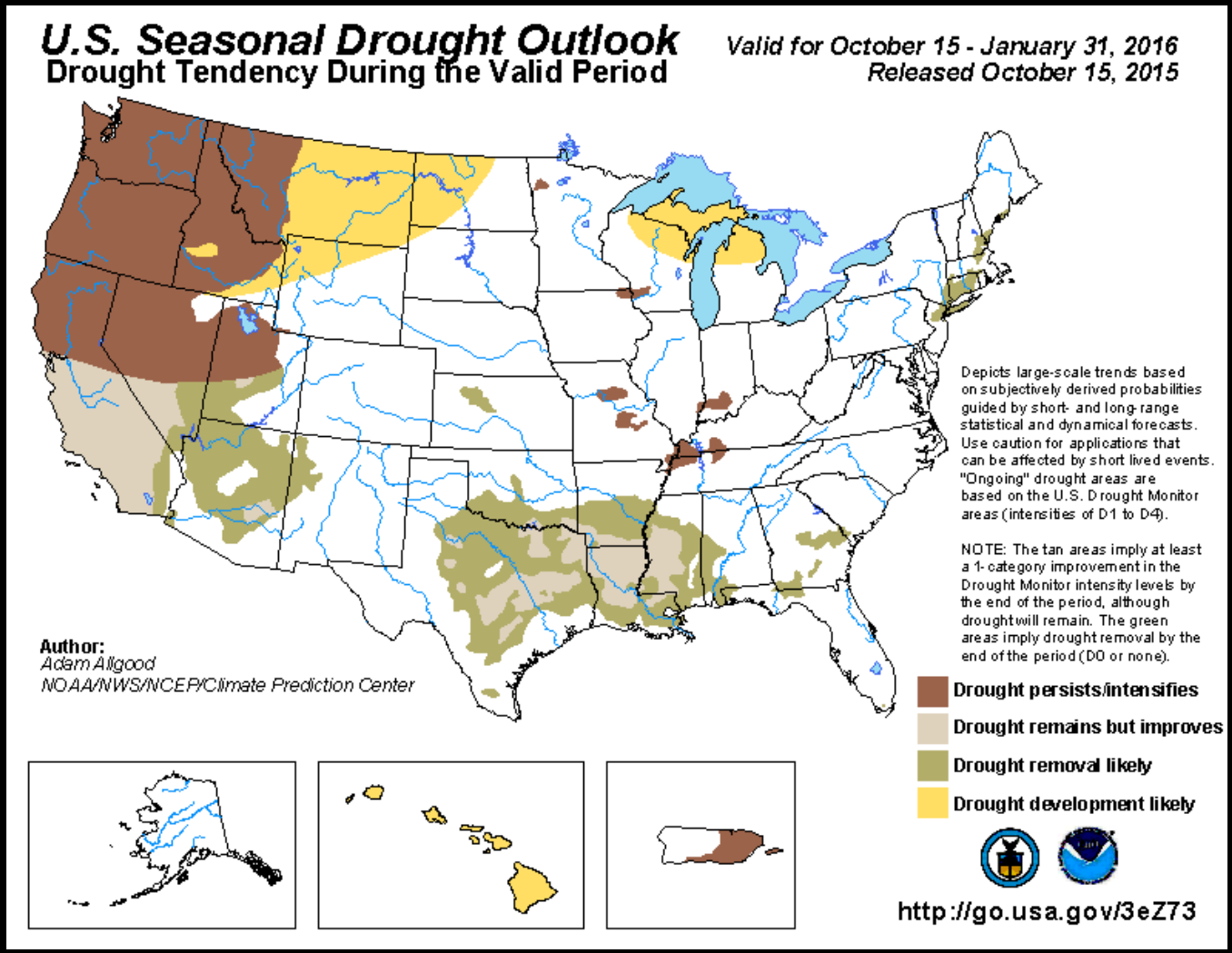
Precipitation



- 33% to 60% chance precipitation will average below normal across Montana

Drought Outlook through January

Issued October 15



- Those areas currently in drought status (D1 – D3) expected to persist or intensify
- Drought development expected in central and eastern Montana

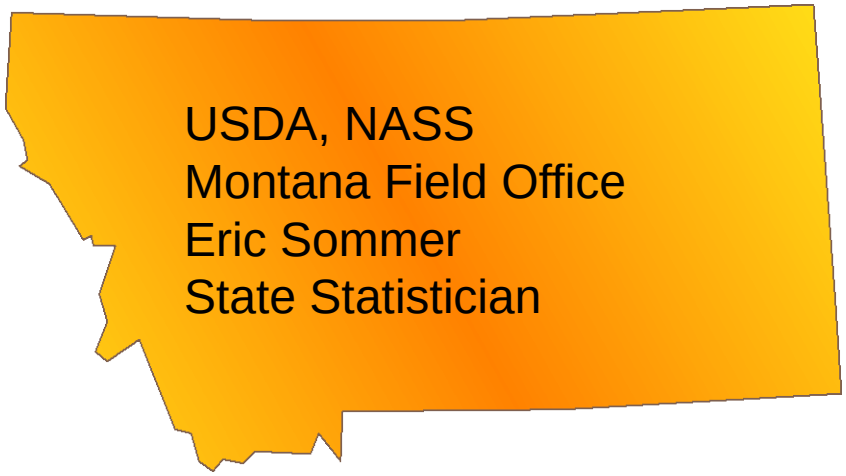
In Summary...

- September brought well above average precipitation to Rocky Mountain Front and adjacent plains as well as areas along North Dakota border. West of the Divide and a large portion of central and eastern Montana received well below average precipitation.
- September temperatures mostly near average over northwest half, above average southeast half
- Water year ended with areas west and southwest below normal, small area central above normal
- Crop year… virtually done… west of Divide well below normal, small area central above normal
- El Niño continues to strengthen. Expected to persist through winter, gradually weakening through spring
  - Now signs it may weaken slightly earlier than previously forecast
- Drought Outlook continues to show those areas of drought in Montana expected to persist or intensify through January with drought development expected over central into eastern Montana

weather.gov

weather.gov/billings
weather.gov/glasgow
weather.gov/missoula
weather.gov/greatfalls

Montana Drought & Water Supply Advisory Committee



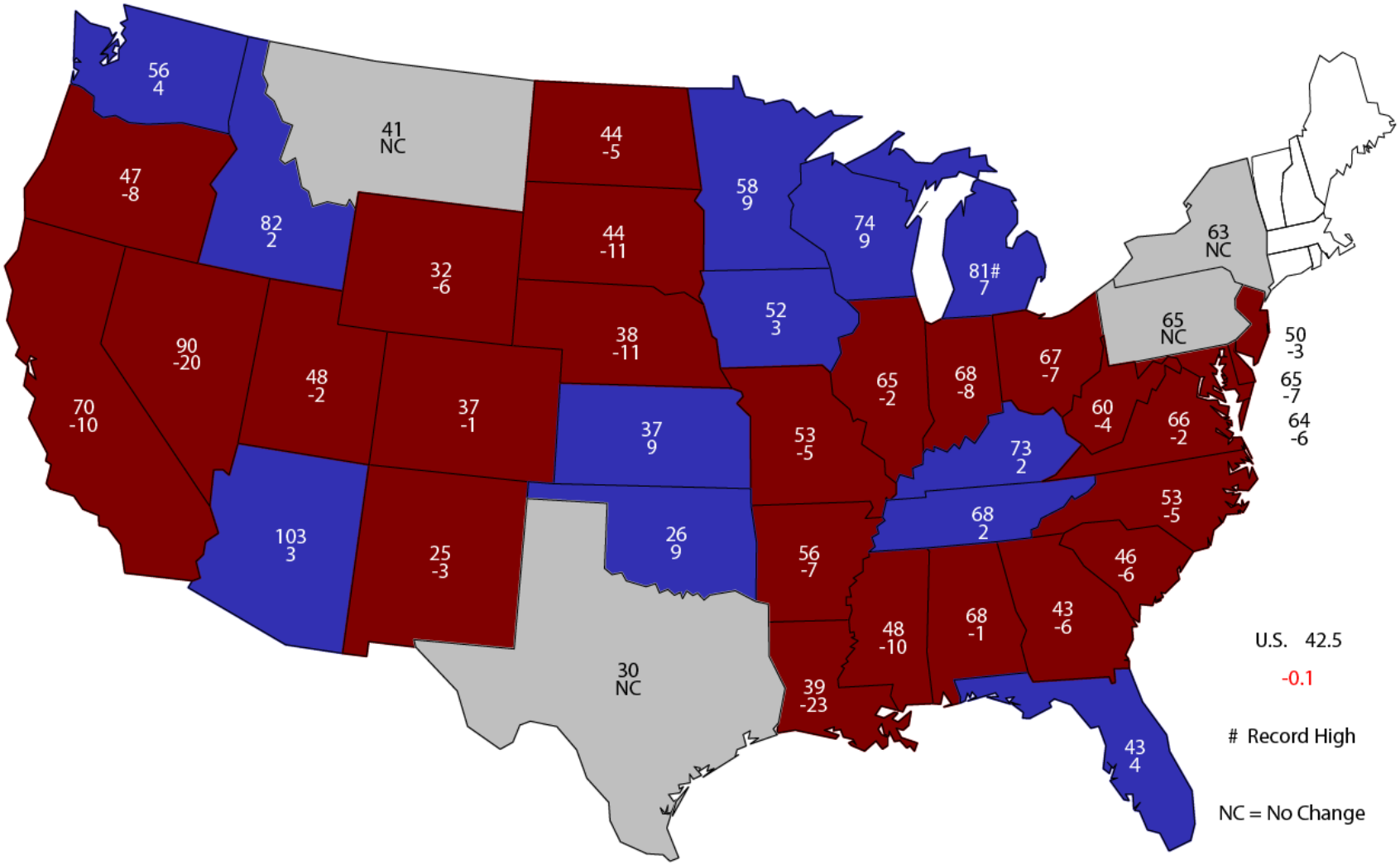
MT Small Grains Annual Summary

Crop	Unit	September 2014	% Change from Previous Season
Winter Wheat			
Harvested	Mil Ac	2.22	-1.0
Yield	Bu/Ac	41.0	nc
Production	Mil Bu	91.02	-1.0
Other Spring			
Harvested	Mil Ac	2.44	-18.1
Yield	Bu/Ac	31.0	-11.4
Production	Mil Bu	75.64	-27.5
Durum			
Harvested	Tho Ac	605	+40.7
Yield	Bu/Ac	31	nc
Production	Mil Bu	18.76	+40.7
All Wheat			
Production	Mil Bu	185.42	-11

USDA-NASS 9-30-15

2015 Winter Wheat Yield

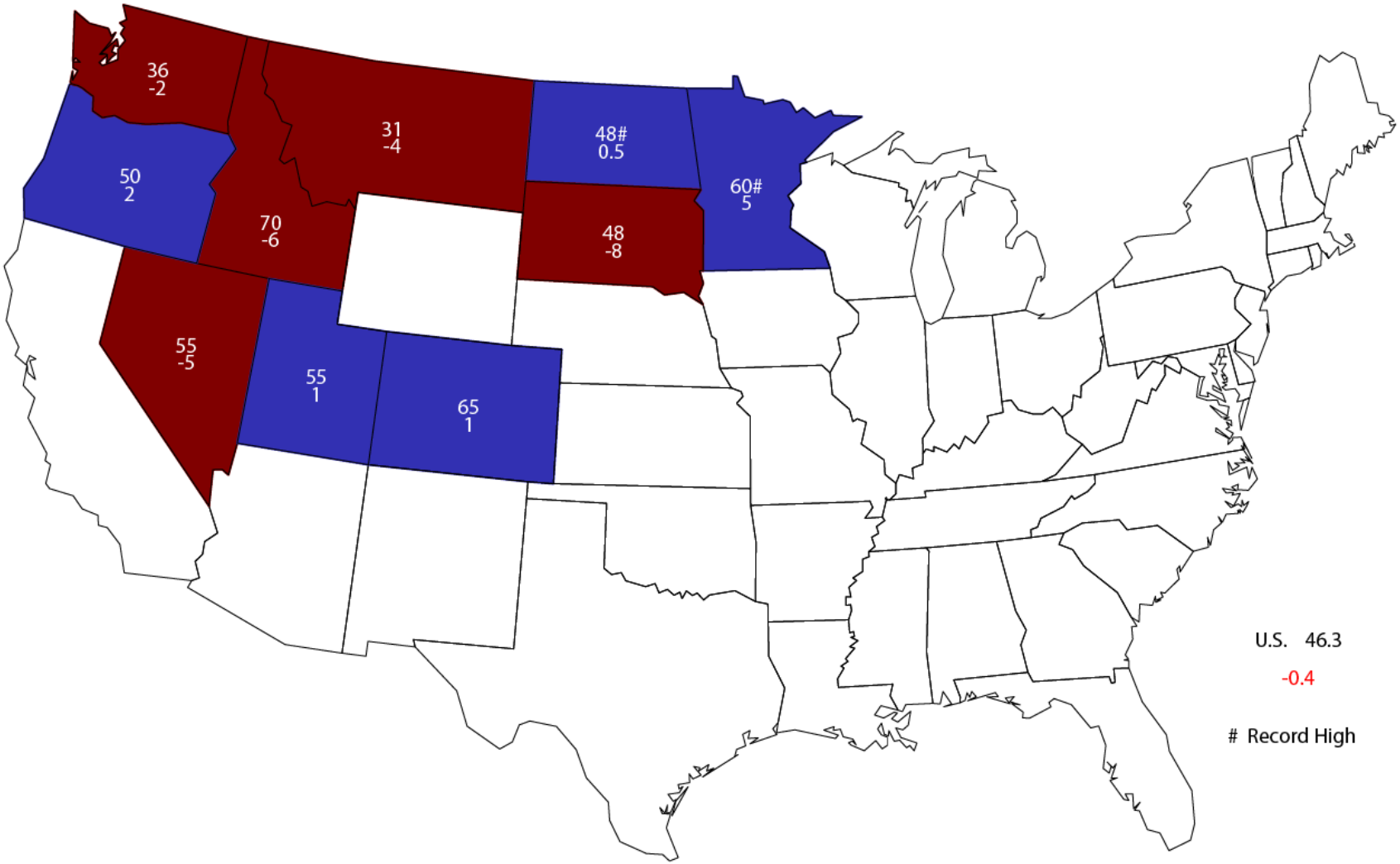
Bushels and Change From Previous Year



USDA-NASS
9-30-15

2015 Other Spring Wheat Yield

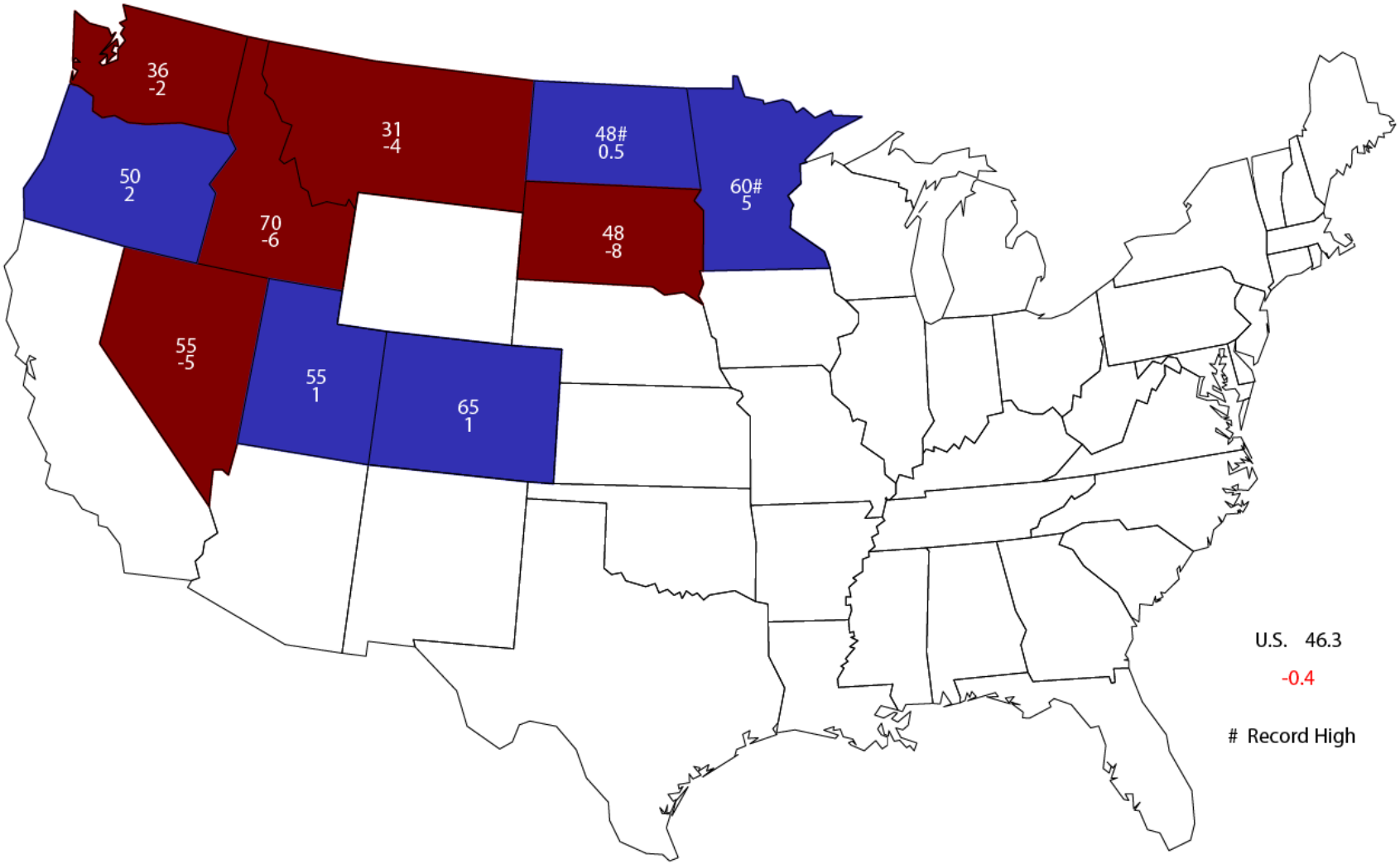
Bushels and Change From Previous Year



USDA-NASS
9-30-15

2015 Other Spring Wheat Yield

Bushels and Change From Previous Year



USDA-NASS
9-30-15

Crop Weather Report
Week Ending October 11, 2015

- Cool and Wet in Areas before turning Hot and dry
- Topsoil moisture conditions at 55 percent adequate and surplus
  - Below the five-year average of 65 percent
- Subsoil moisture conditions at 51 percent adequate and surplus
  - Below the five-year average of 60 percent

Topsoil Moisture

Week Ending October 11, 2015

	This week	Last week	Last year	5-yr Avg.
Very short	15	16	2	11
Short	30	30	13	24
Adequate	48	47	78	60
Surplus	7	7	7	5

Subsoil Moisture

Week Ending October 11, 2015

	This week	Last week	Last year	5-yr Avg.
Very short	15	15	2	14
Short	34	34	13	26
Adequate	42	42	77	57
Surplus	9	9	8	3

Crop Progress Percent
Week Ending October 11, 2015

	This week	Last week	Last year	5-yr Avg.
Potatoes harvested	72	60	52	59
Sugar Beets harvested	23	22	15	30

Crop Progress Percent
Week Ending September 15, 2014

	This week	Last week	Last year	5-yr Avg.
Corn for Grain harvested	33	25	30	15
Corn for Silage harvested	93	89	94	86

Crop Progress Percent
Week Ending October 11, 2015

	This week	Last week	Last year	5-yr Avg.
Winter Wheat planted	92	86	90	80
Winter Wheat emerged	63	36	48	39

Corn Crop Condition
Week Ending October 11, 2015

	Very poor	Poor	Fair	Good	Excellent
This week	3	6	34	44	13
Last week	3	6	33	45	13
Last year	--	2	30	53	15
5-yr Avg.	1	5	29	47	18

Sugar Beets Crop Condition
Week Ending October 11, 2015

	Very poor	Poor	Fair	Good	Excellent
This week	--	8	28	47	17
Last week	--	8	28	48	16
Last year	1	1	15	41	42
5-yr Avg.	1	5	27	48	19

Movement from Summer Ranges
Week Ending October 11, 2015

	This week	Last week	Last year	5-yr Avg.
Cattle & Calves Moved	58	49	52	52
Sheep & Lambs Moved	73	62	71	61

Range & Pasture Feed Condition
Week Ending October 11, 2015

	Very poor	Poor	Fair	Good	Excellent
This week	13	27	41	18	1
Last week	12	26	42	18	2
Last year	3	12	32	41	12
5-yr Avg.	13	16	32	32	7

Summary
Week Ending October 11, 2015

- Harvest of most crops nearing completion
- Winter wheat seeding for 2016 crop
  - Ahead of the five-year average

USDA, NASS, Montana Field Office

Eric Sommer, State Statistician

1-800-835-2612 or 406-441-1240

Email: nass-mt@nass.usda.gov

www.nass.usda.gov/mt/

http://www.nass.usda.gov/Statistics_by_State/Montana Publications/Crop_Progress_&_Condition/index.asp

USGS Streamflows, October 2015

New Minimum Flow for October 14

06078500 – North Fork Sun River near Augusta

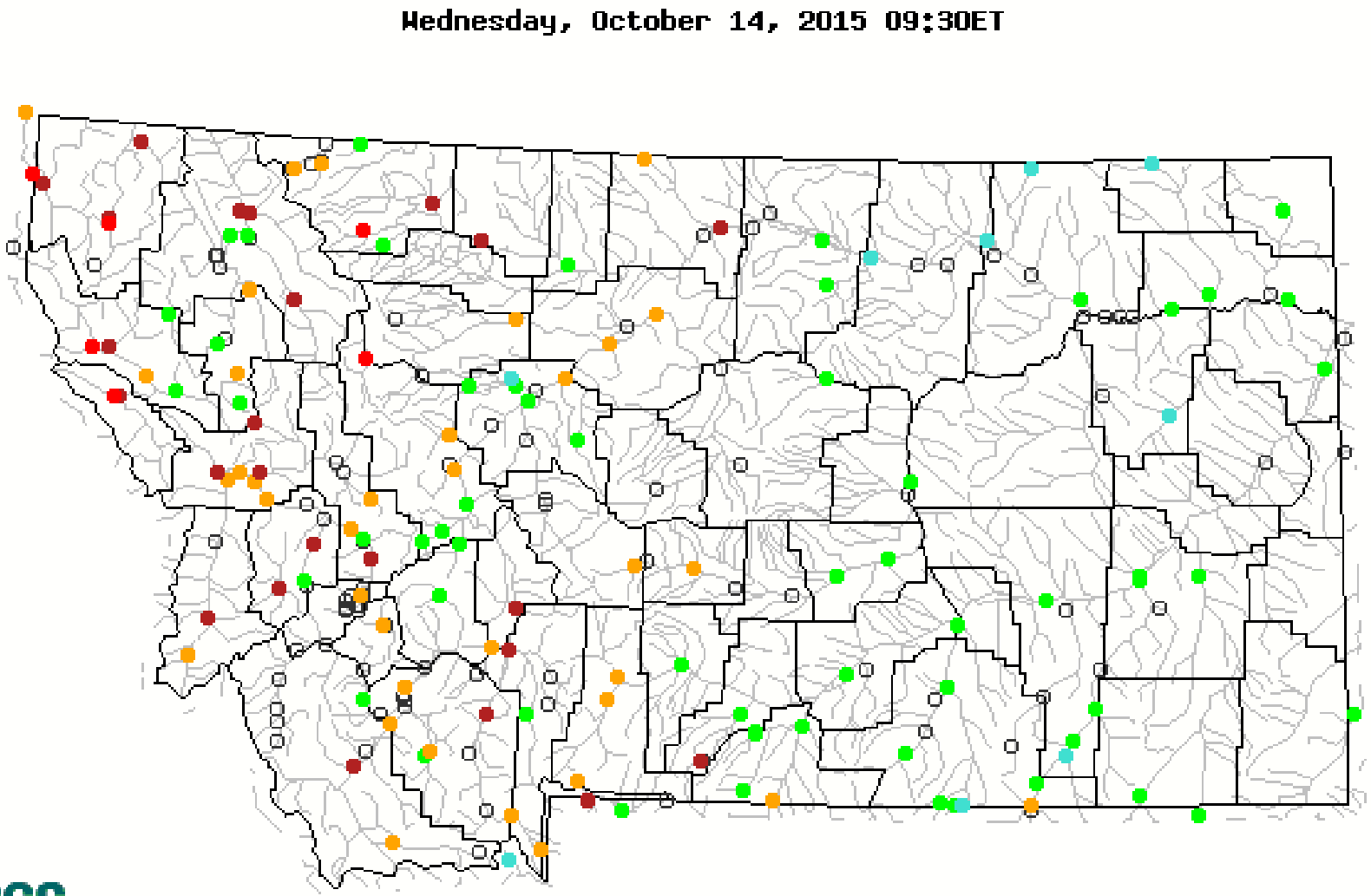
06091700 – Two Medicine River below South Fork, near Browning

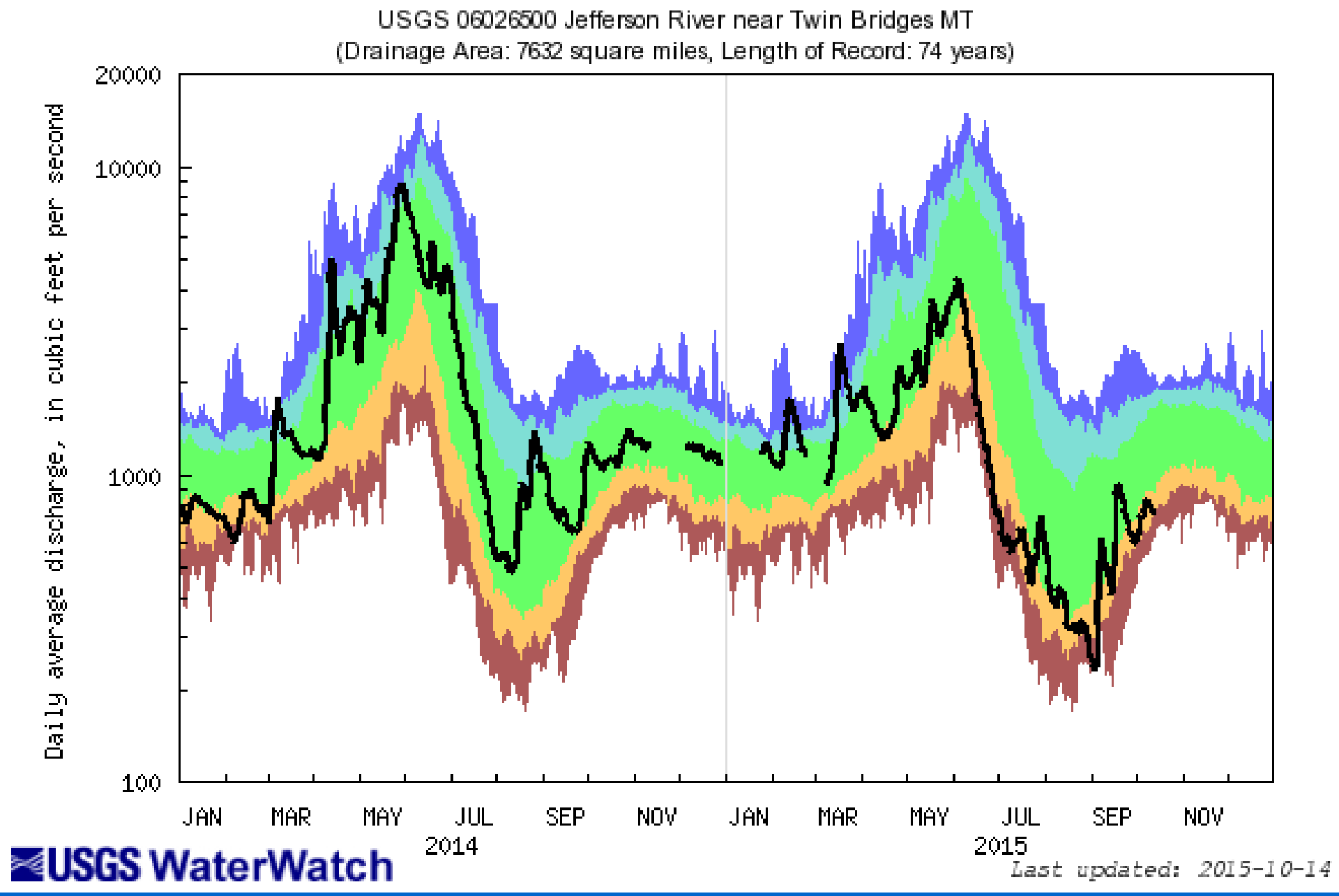
12302055 – Fisher River near Libby

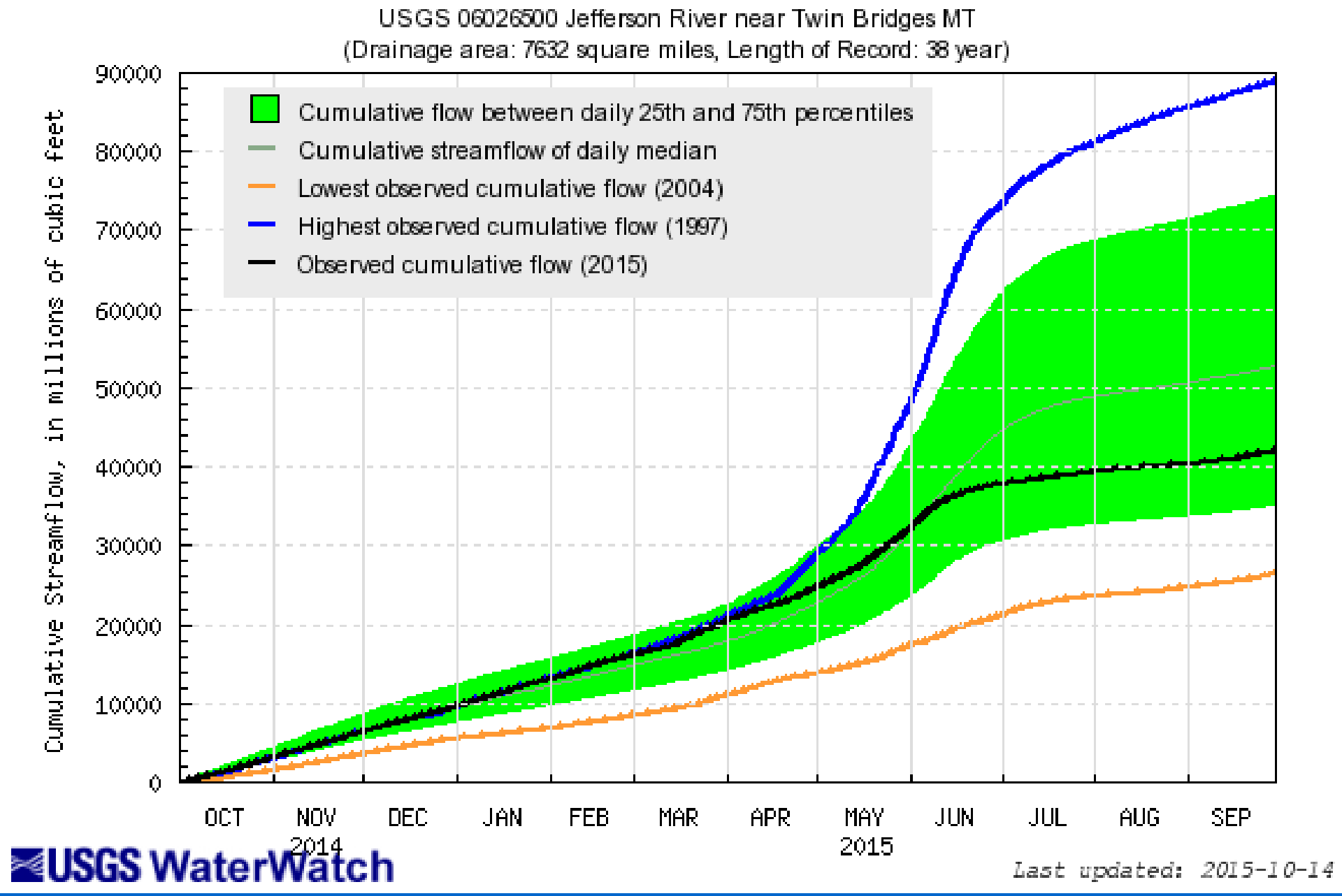
12354000 – St. Regis River near St. Regis

12390700 – Prospect Creek at Thompson Falls

DAILY STREAMFLOW CONDITIONS

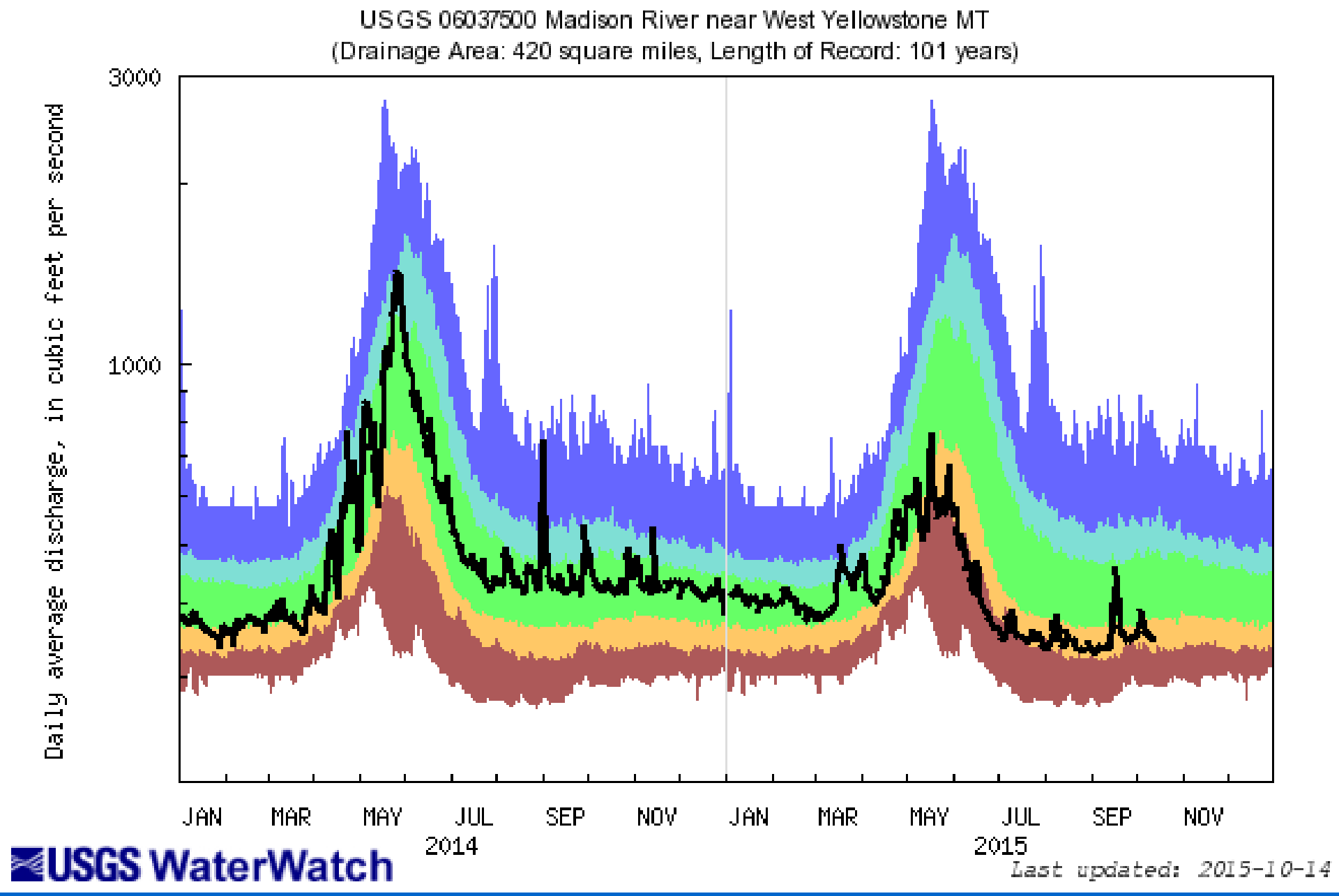


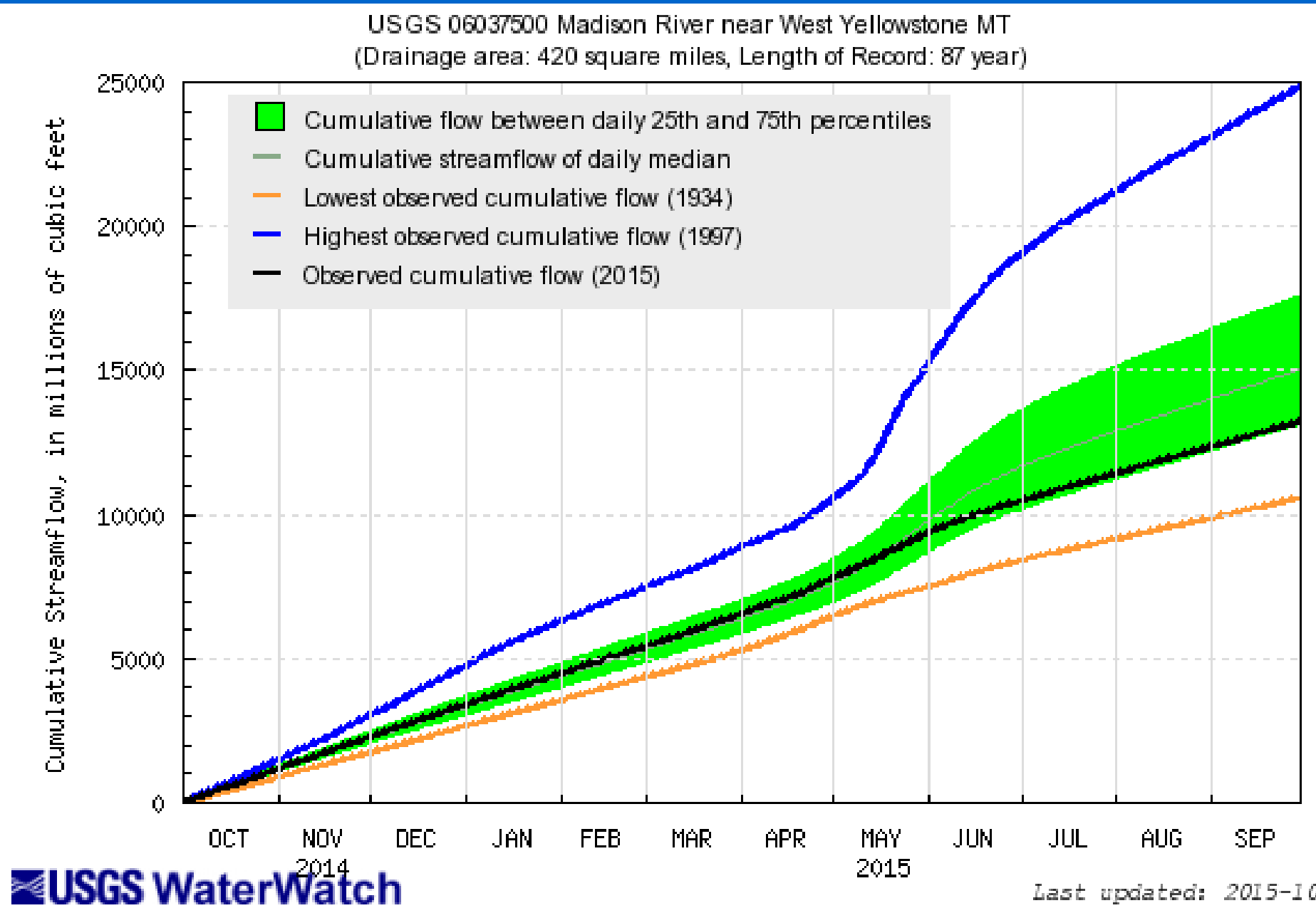

USGS 06026500 Jefferson River near Twin Bridges MT
(Drainage Area: 7632 square miles, Length of Record: 74 years)
Daily average discharge, in cubic feet per second
20000
10000
1000
100
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile -highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal

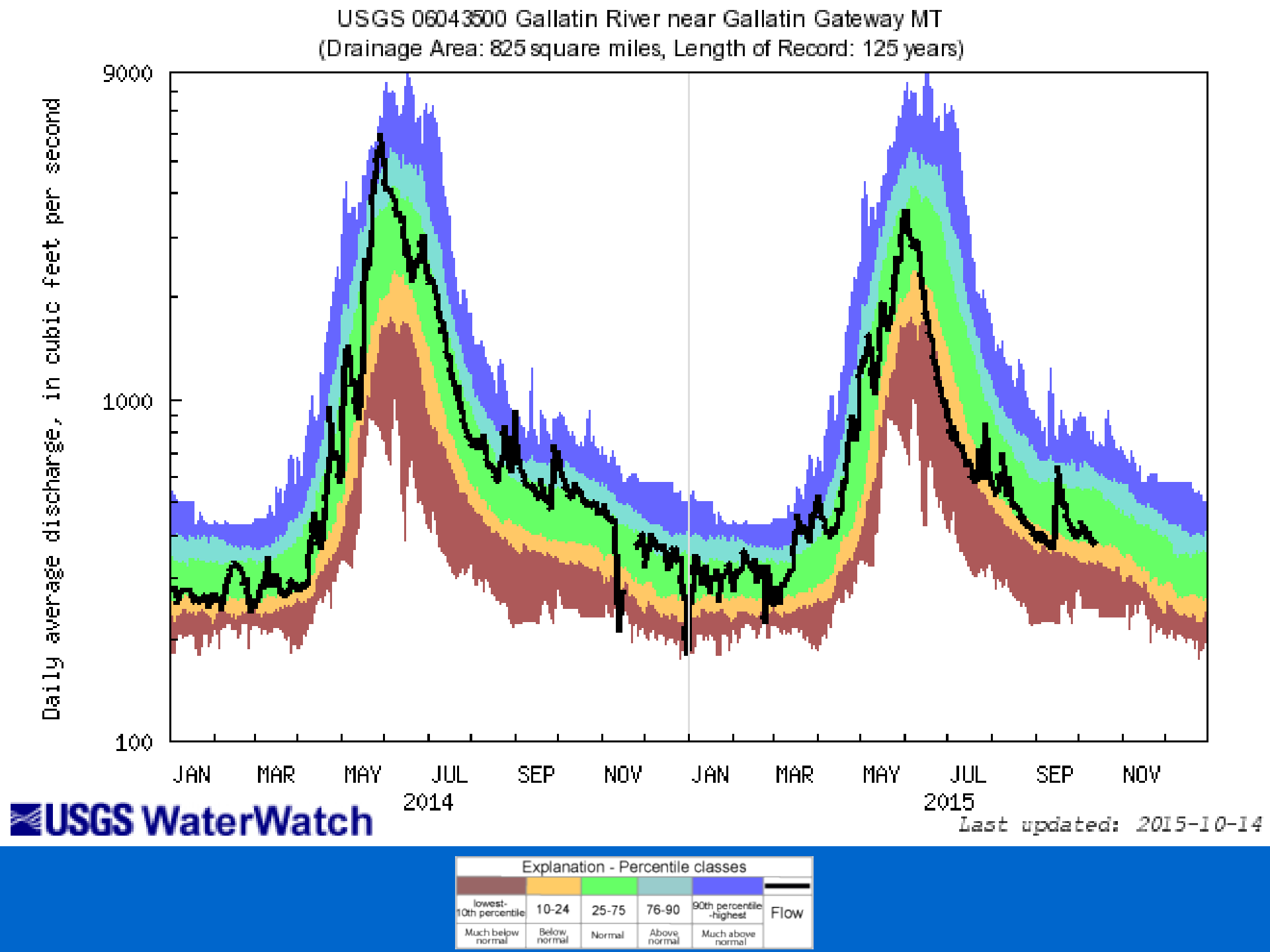


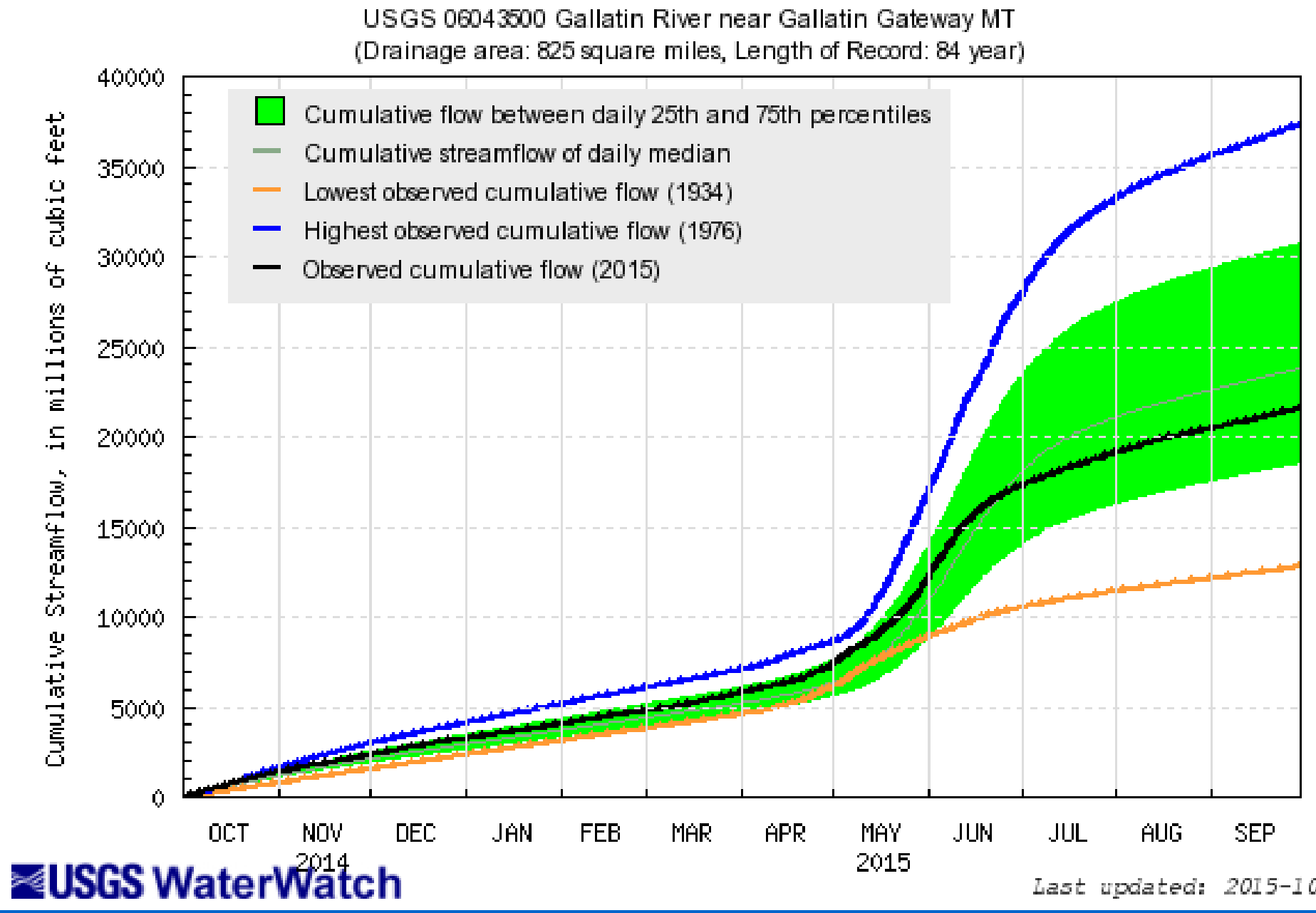
USGS WaterWatch

Last updated: 2015-10-14


USGS 06037500 Madison River near West Yellowstone MT
(Drainage Area: 420 square miles, Length of Record: 101 years)
Daily average discharge, in cubic feet per second
3000
1000
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile -highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal

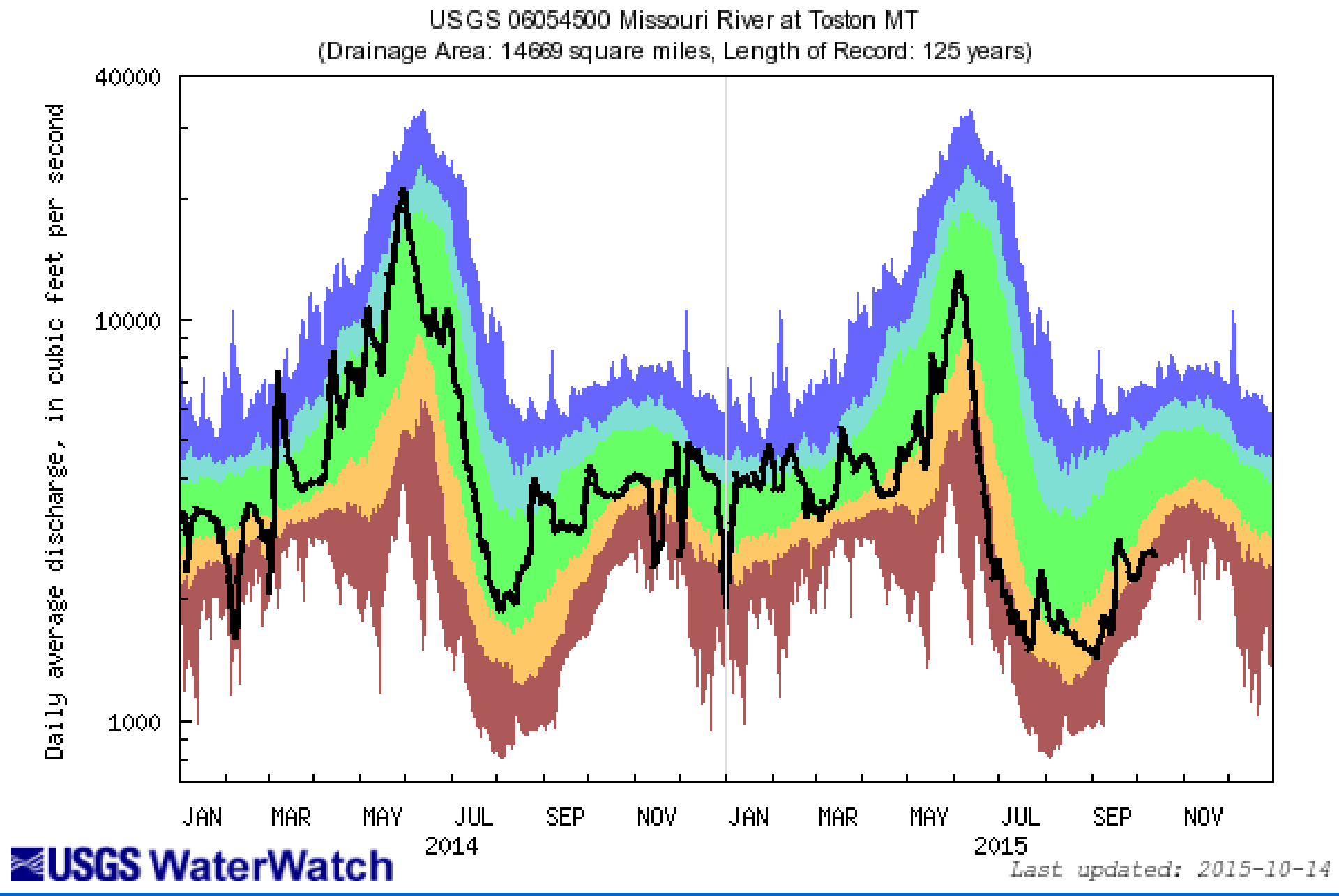

USGS 06037500 Madison River near West Yellowstone MT
(Drainage area: 420 square miles, Length of Record: 87 year)
Cumulative flow between daily 25th and 75th percentiles
Cumulative streamflow of daily median
Lowest observed cumulative flow (1934)
Highest observed cumulative flow (1997)
Observed cumulative flow (2015)
Cumulative Streamflow, in millions of cubic feet
25000
20000
15000
10000
5000
0
OCT
NOV
2014
DEC
JAN
FEB
MAR
APR
MAY
2015
JUN
JUL
AUG
SEP
USGS WaterWatch
Last updated: 2015-10-14

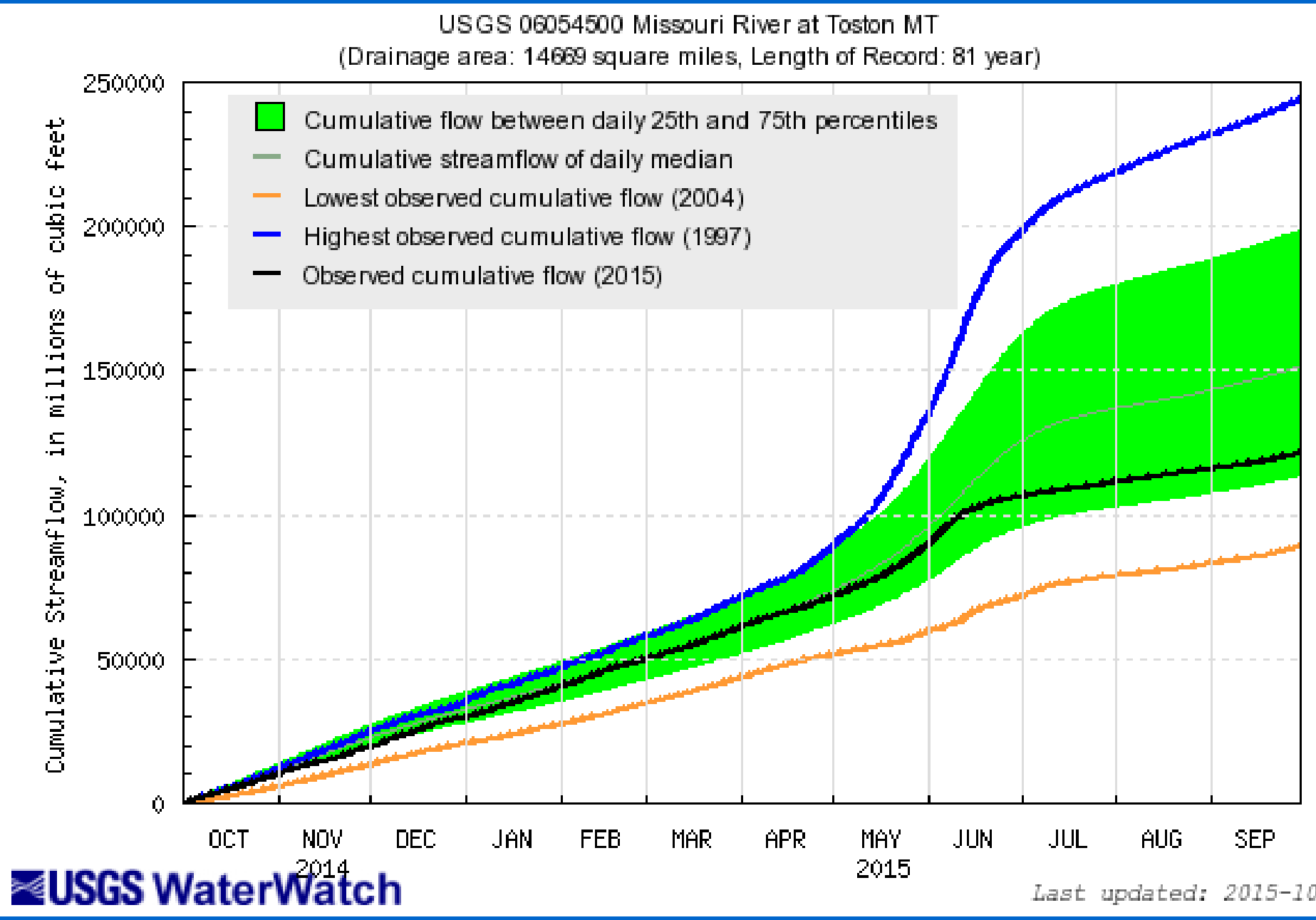

USGS 06043500 Gallatin River near Gallatin Gateway MT
(Drainage Area: 825 square miles, Length of Record: 125 years)
Daily average discharge, in cubic feet per second
9000
1000
100
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile-highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal



USGS WaterWatch

Last updated: 2015-10-14


USGS 06054500 Missouri River at Toston MT
(Drainage Area: 14669 square miles, Length of Record: 125 years)
Daily average discharge, in cubic feet per second
40000
10000
1000
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile-highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal



USGS WaterWatch

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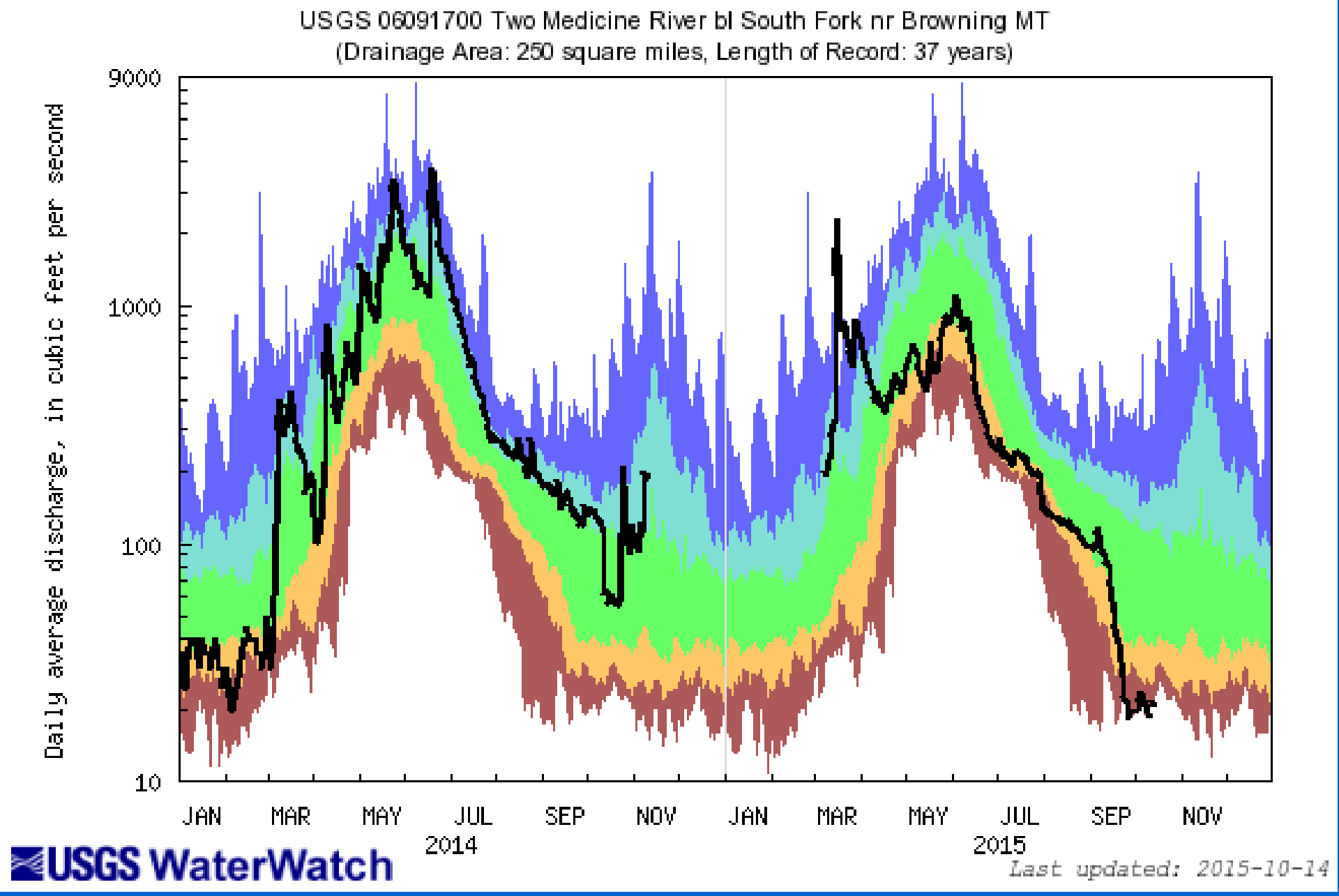
USGS 06091700 Two Medicine River bl South Fork nr Browning MT
(Drainage Area: 250 square miles, Length of Record: 37 years)
Daily average discharge, in cubic feet per second
9000
1000
100
10
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
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10-24
25-75
76-90
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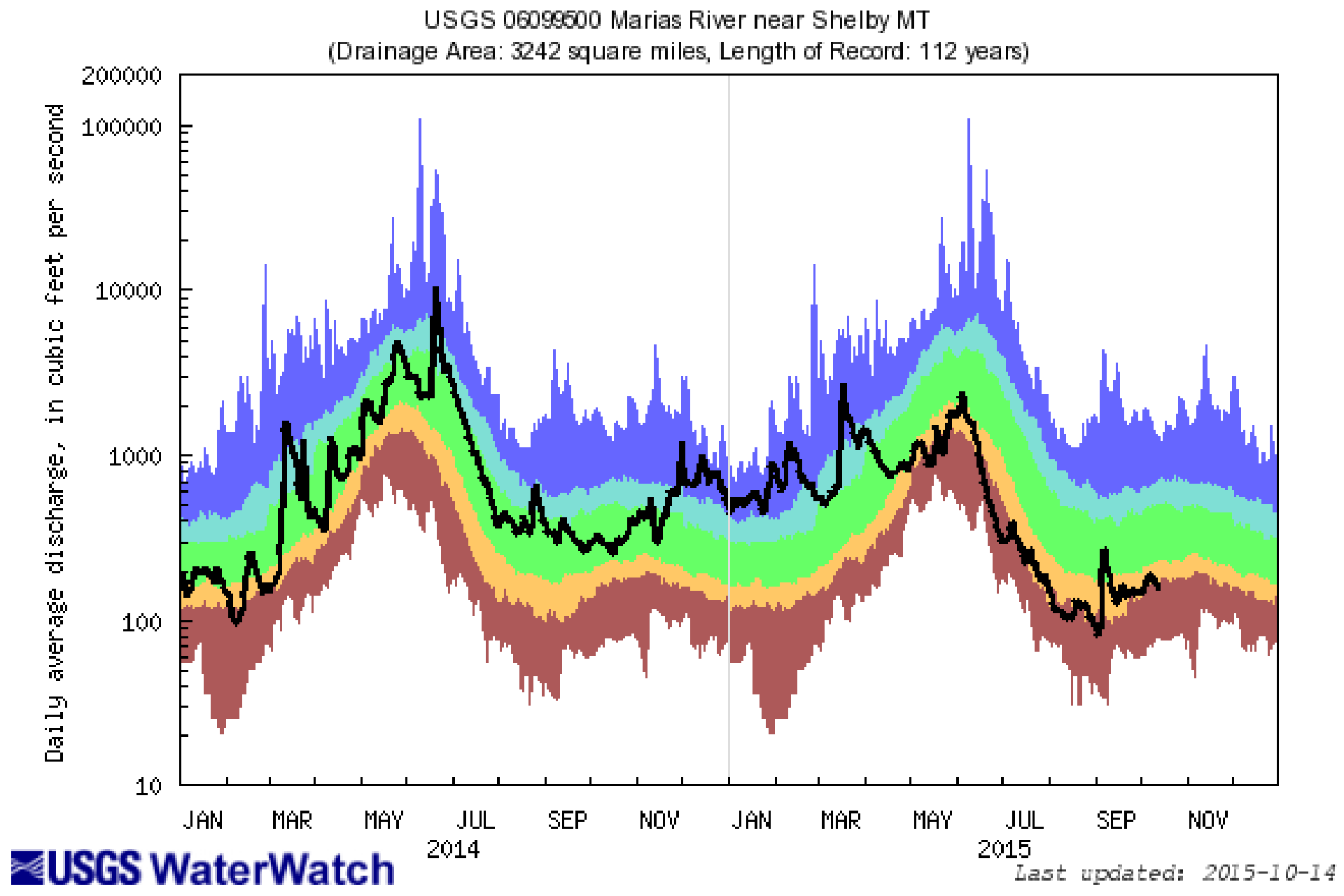
Much below normal
Below normal
Normal
Above normal
Much above normal


USGS 06099500 Marias River near Shelby MT
(Drainage Area: 3242 square miles, Length of Record: 112 years)
Daily average discharge, in cubic feet per second
200000
100000
10000
1000
100
10
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
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10-24
25-75
76-90
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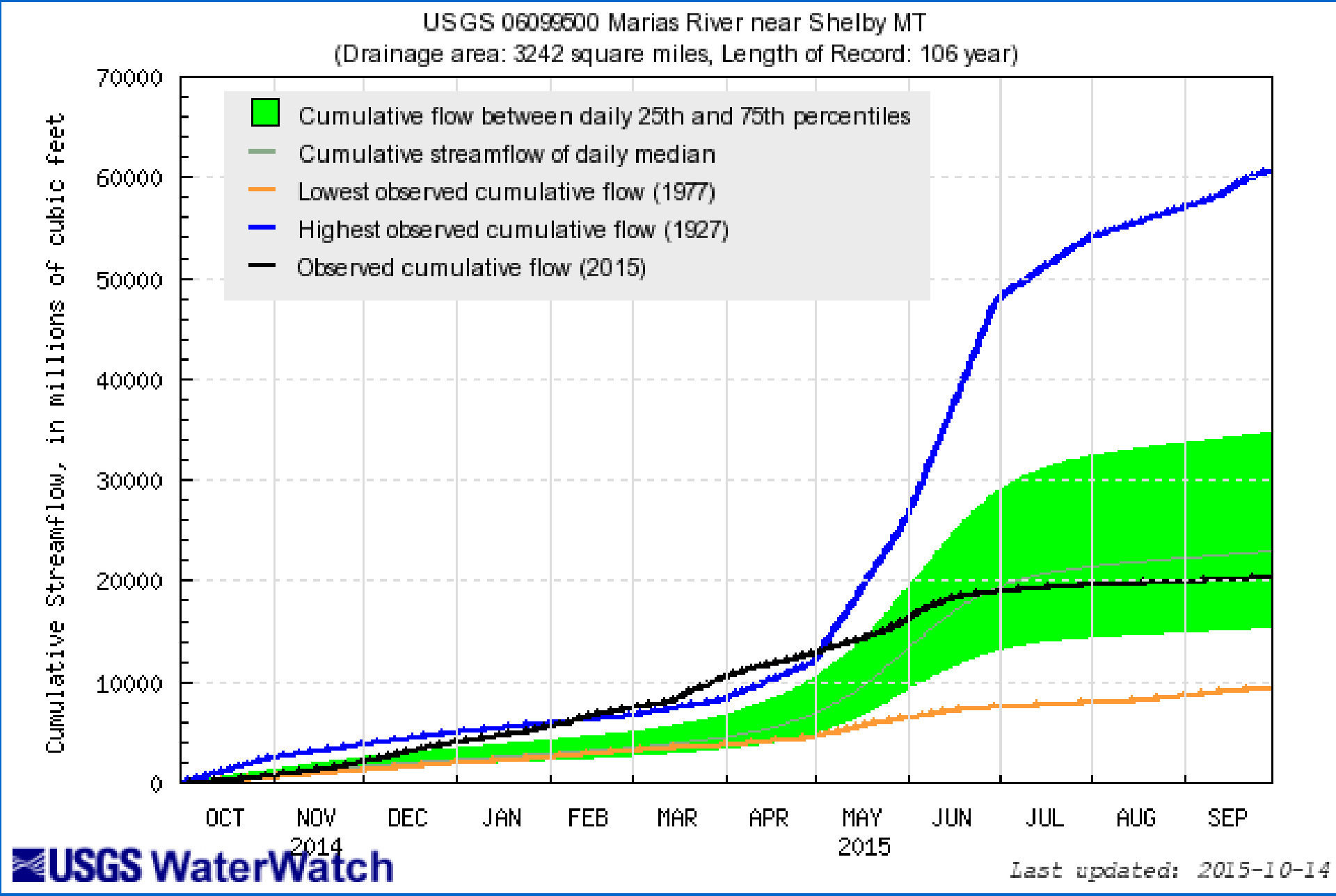
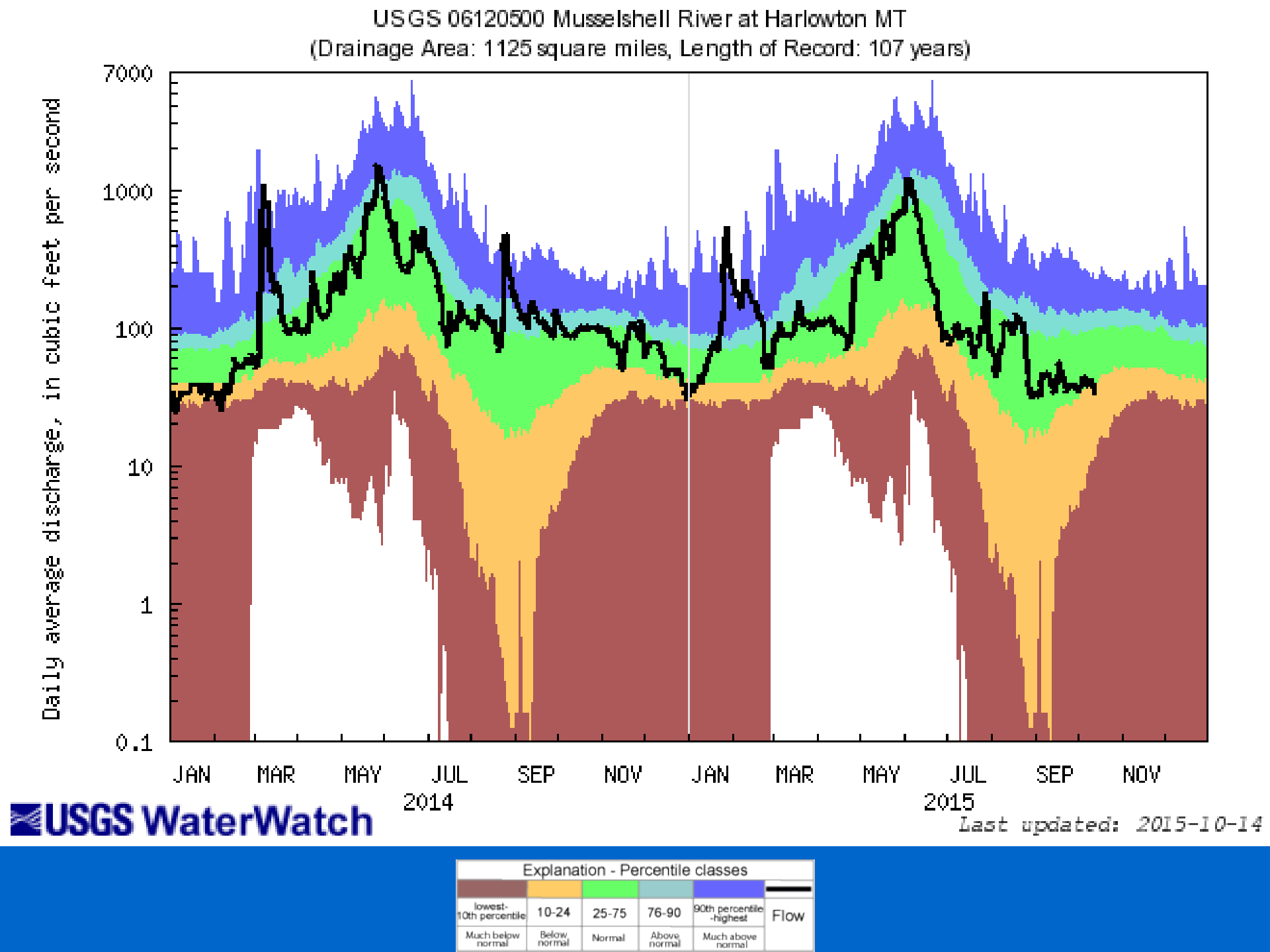
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal


USGS 06099500 Marias River near Shelby MT
(Drainage area: 3242 square miles, Length of Record: 106 year)
Cumulative Streamflow, in millions of cubic feet
70000
60000
50000
40000
30000
20000
10000
0
Cumulative flow between daily 25th and 75th percentiles
Cumulative streamflow of daily median
Lowest observed cumulative flow (1977)
Highest observed cumulative flow (1927)
Observed cumulative flow (2015)
OCT
NOV
2014
DEC
JAN
FEB
MAR
APR
MAY
2015
JUN
JUL
AUG
SEP
USGS WaterWatch
Last updated: 2015-10-14


USGS 06120500 Musselshell River at Harlowton MT
(Drainage Area: 1125 square miles, Length of Record: 107 years)
Daily average discharge, in cubic feet per second
7000
1000
100
10
1
0.1
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile-highest
Flow
Much below normal
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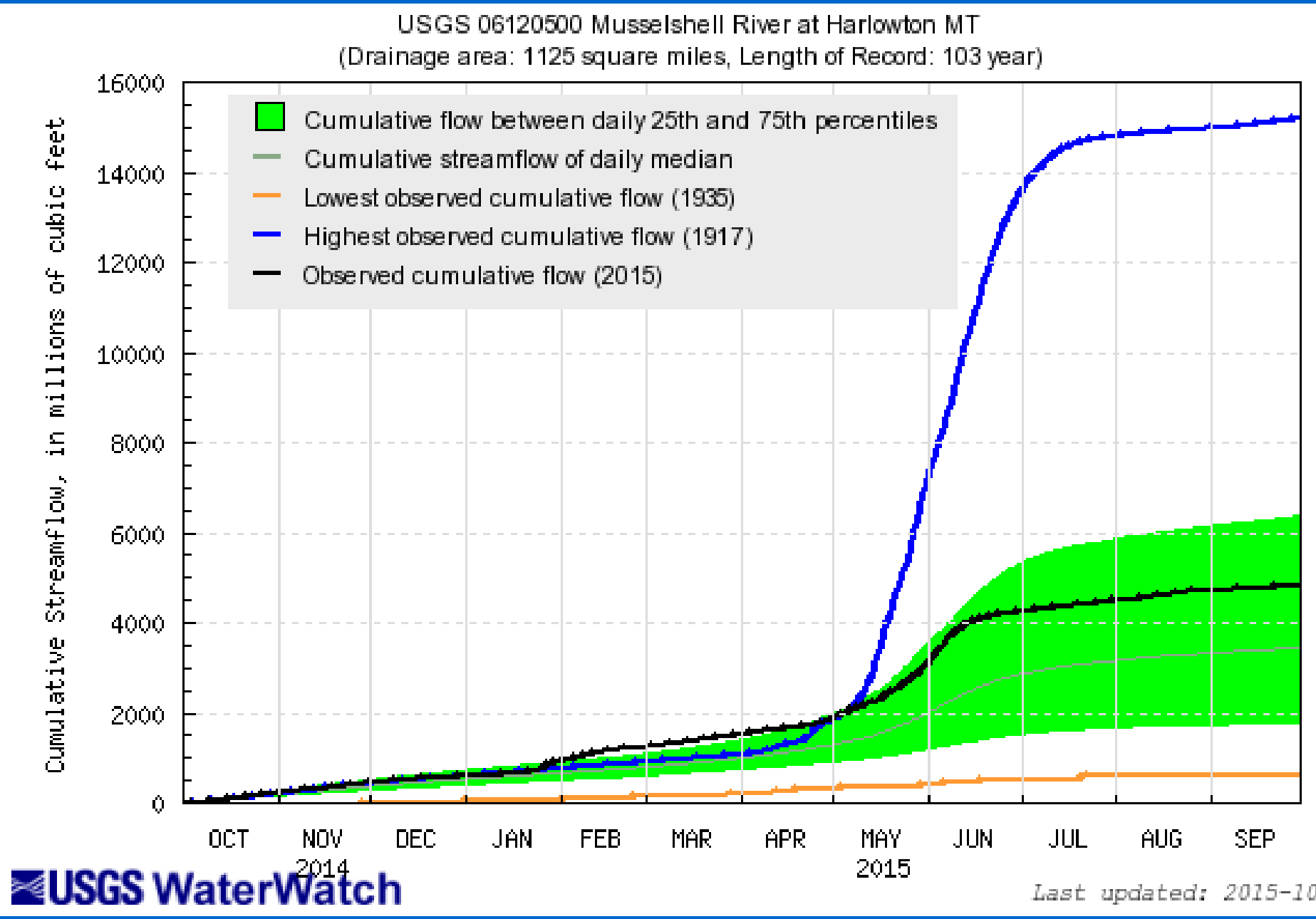
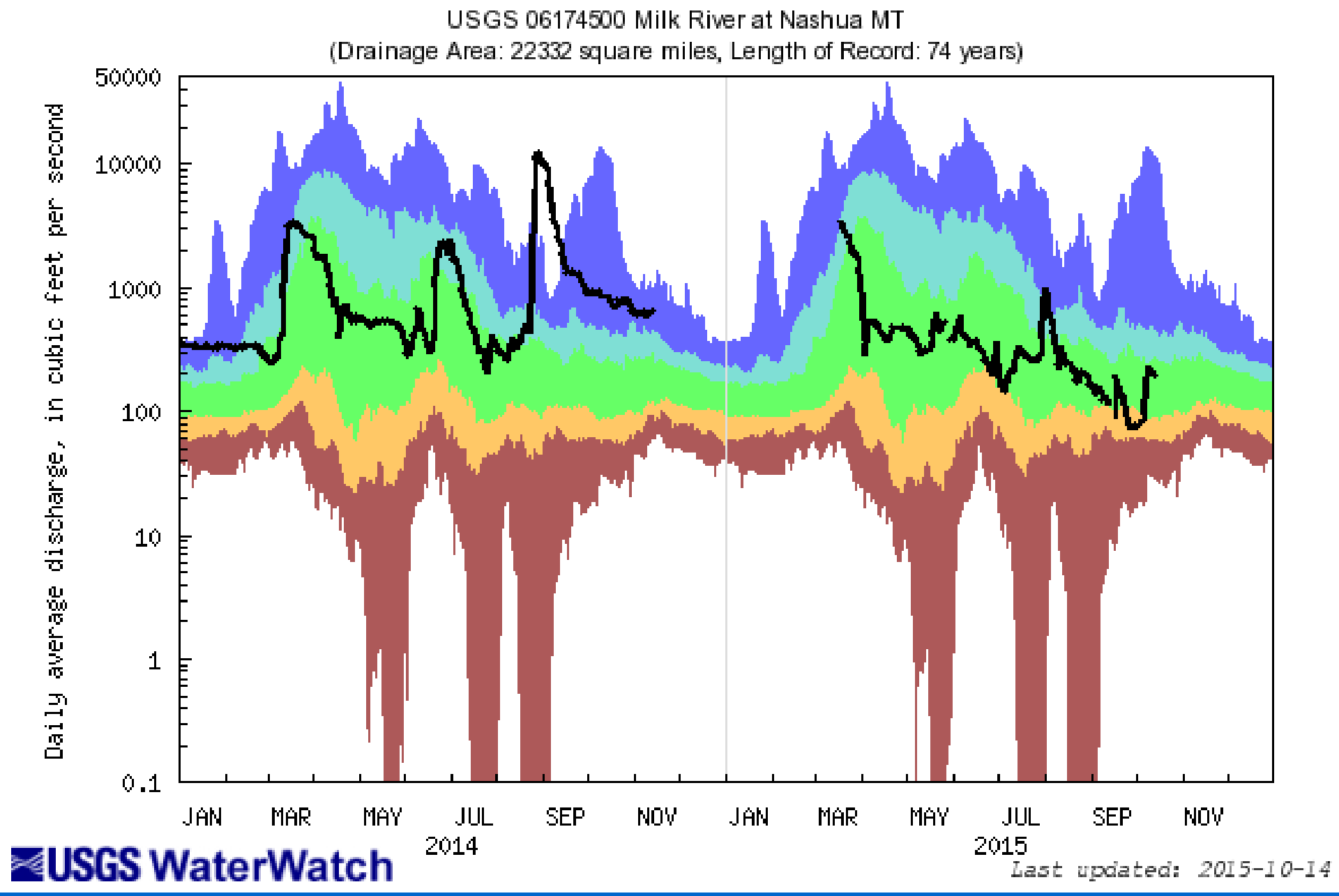


USGS WaterWatch

Last updated: 2015-10-14


USGS 06174500 Milk River at Nashua MT
(Drainage Area: 22332 square miles, Length of Record: 74 years)
Daily average discharge, in cubic feet per second
50000
10000
1000
100
10
1
0.1
JAN
MAR
MAY
JUL
SEP
NOV
2014
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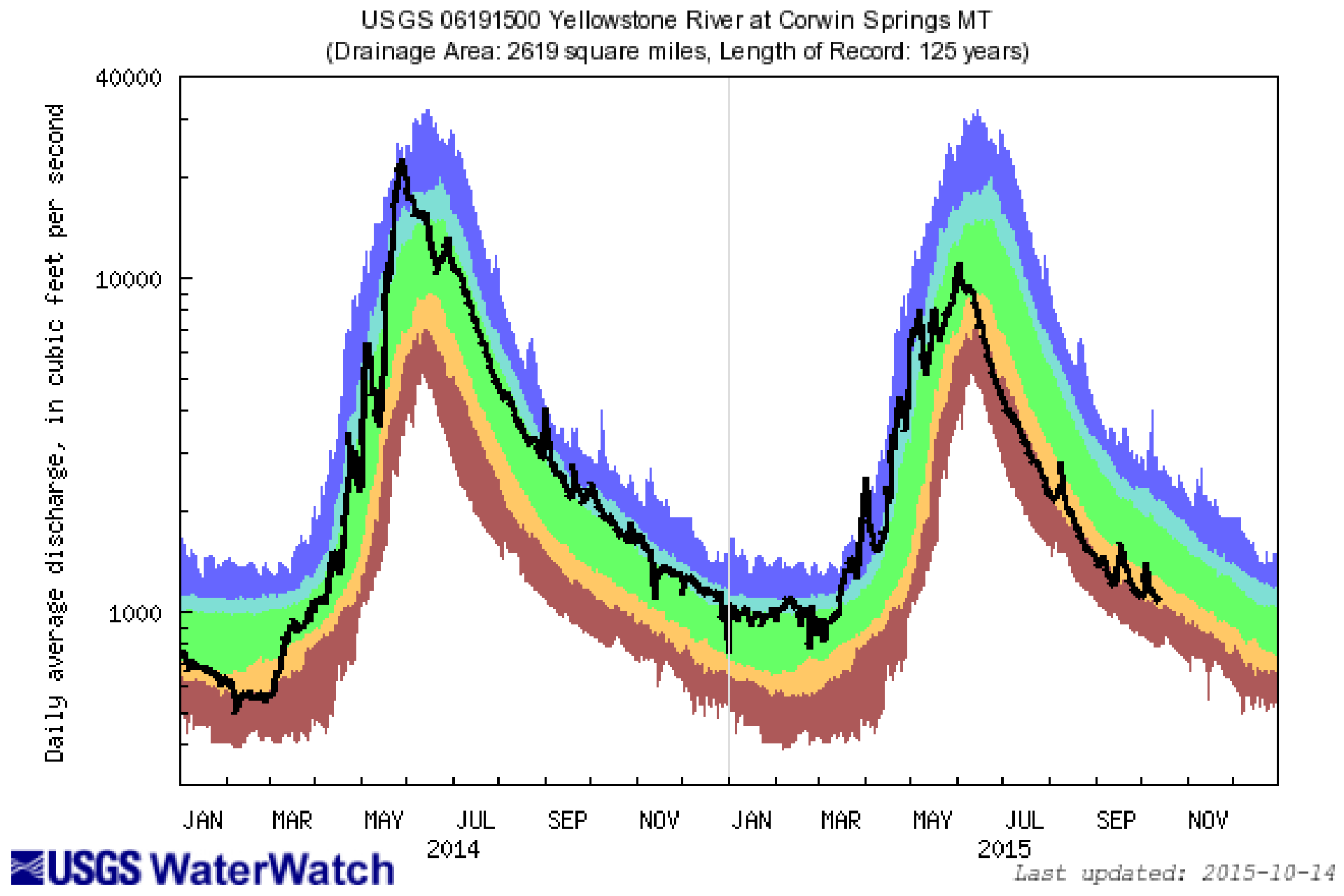
USGS 06191500 Yellowstone River at Corwin Springs MT
(Drainage Area: 2619 square miles, Length of Record: 125 years)
Daily average discharge, in cubic feet per second
40000
10000
1000
JAN
MAR
MAY
JUL
SEP
NOV
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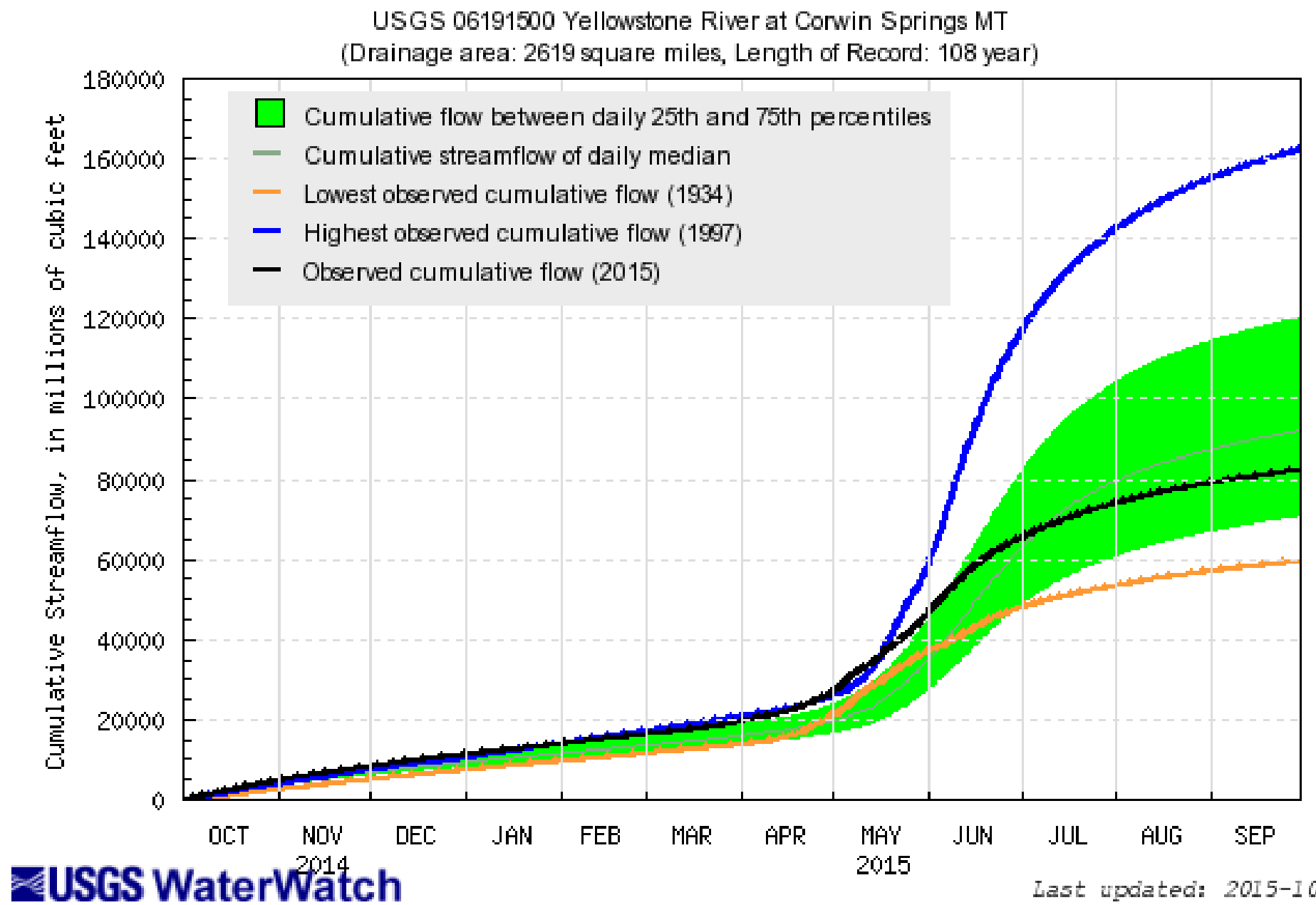
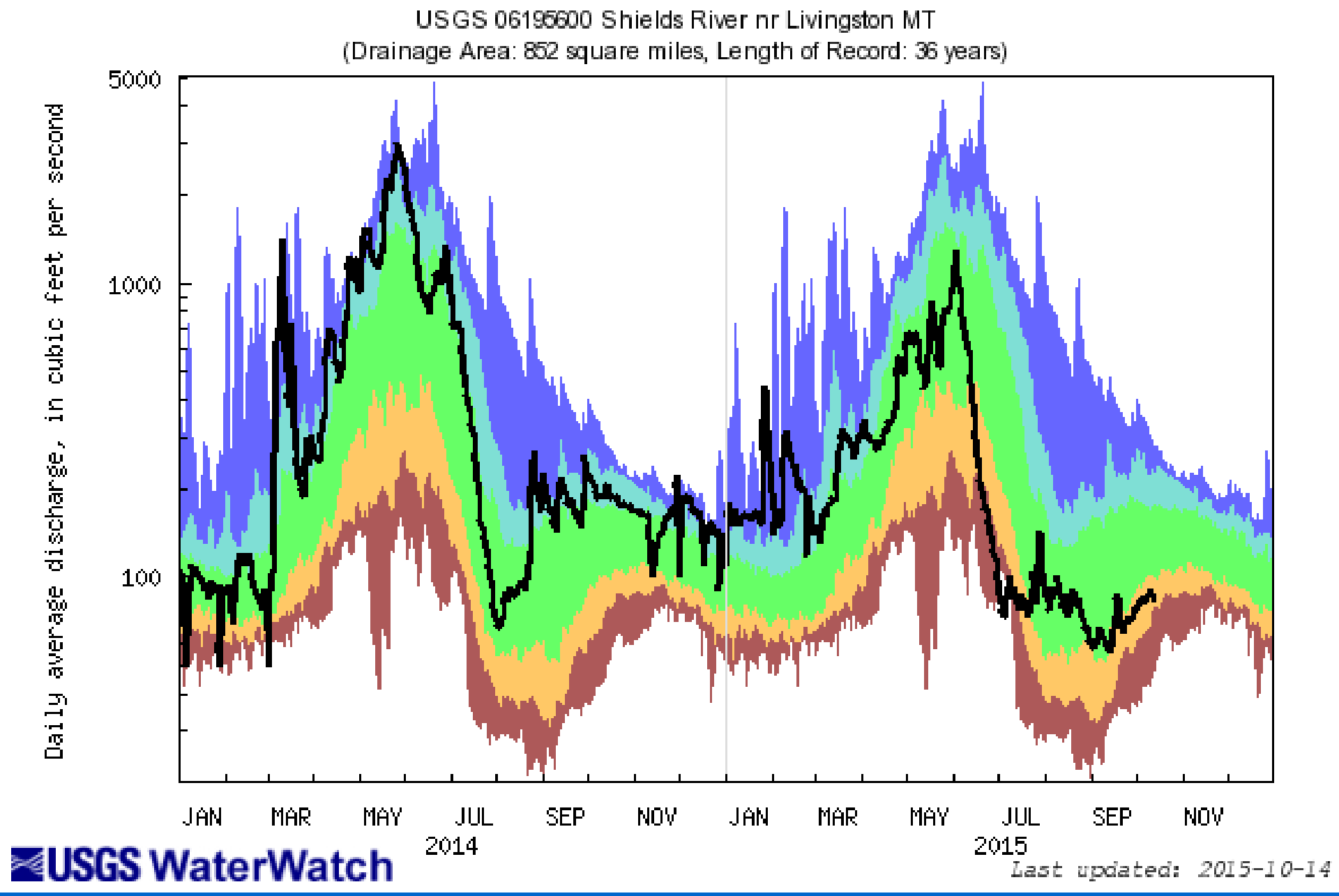


USGS WaterWatch

Last updated: 2015-10-14


USGS 06195600 Shields River nr Livingston MT
(Drainage Area: 852 square miles, Length of Record: 36 years)
Daily average discharge, in cubic feet per second
5000
1000
100
JAN
MAR
MAY
JUL
SEP
NOV
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
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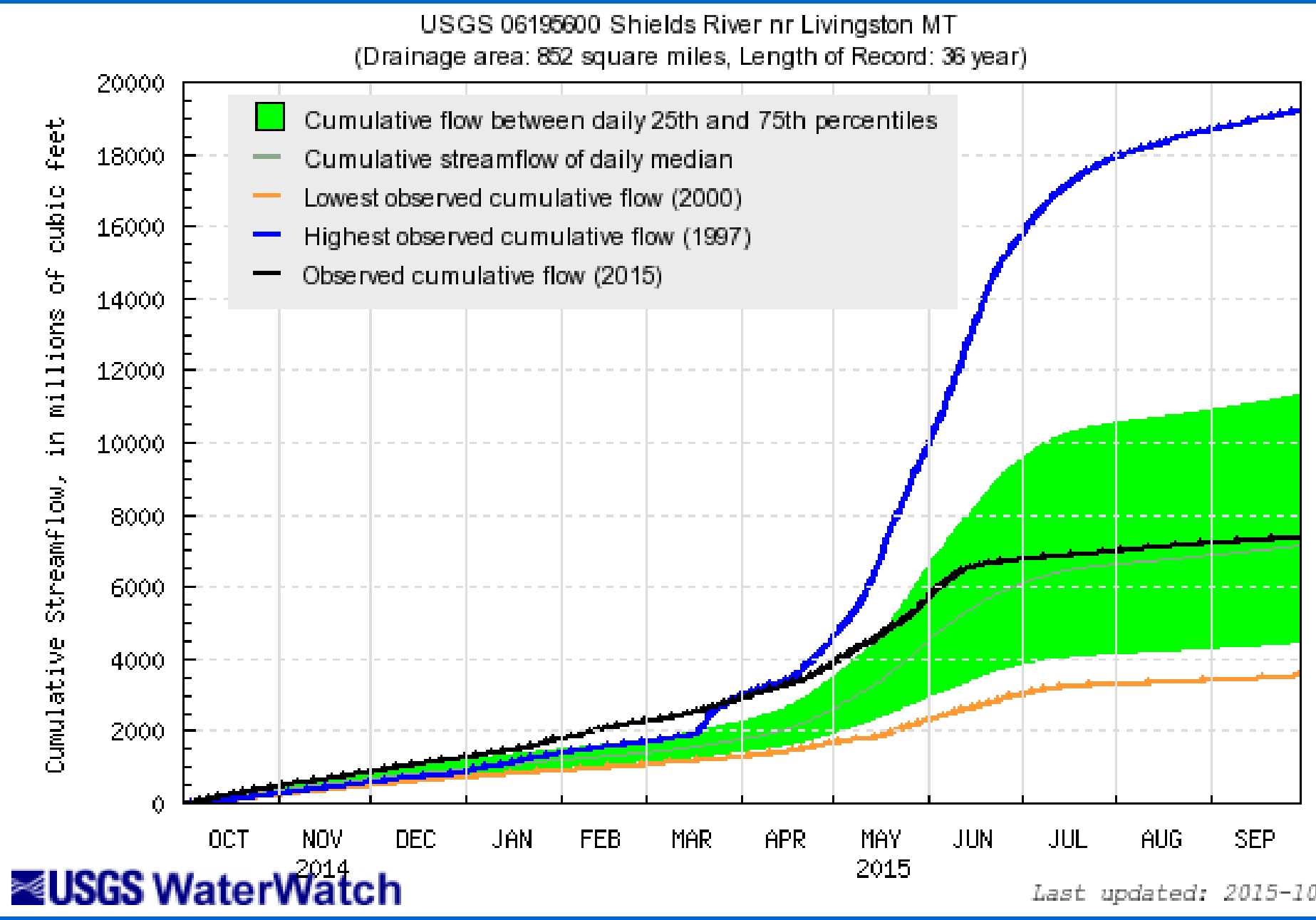
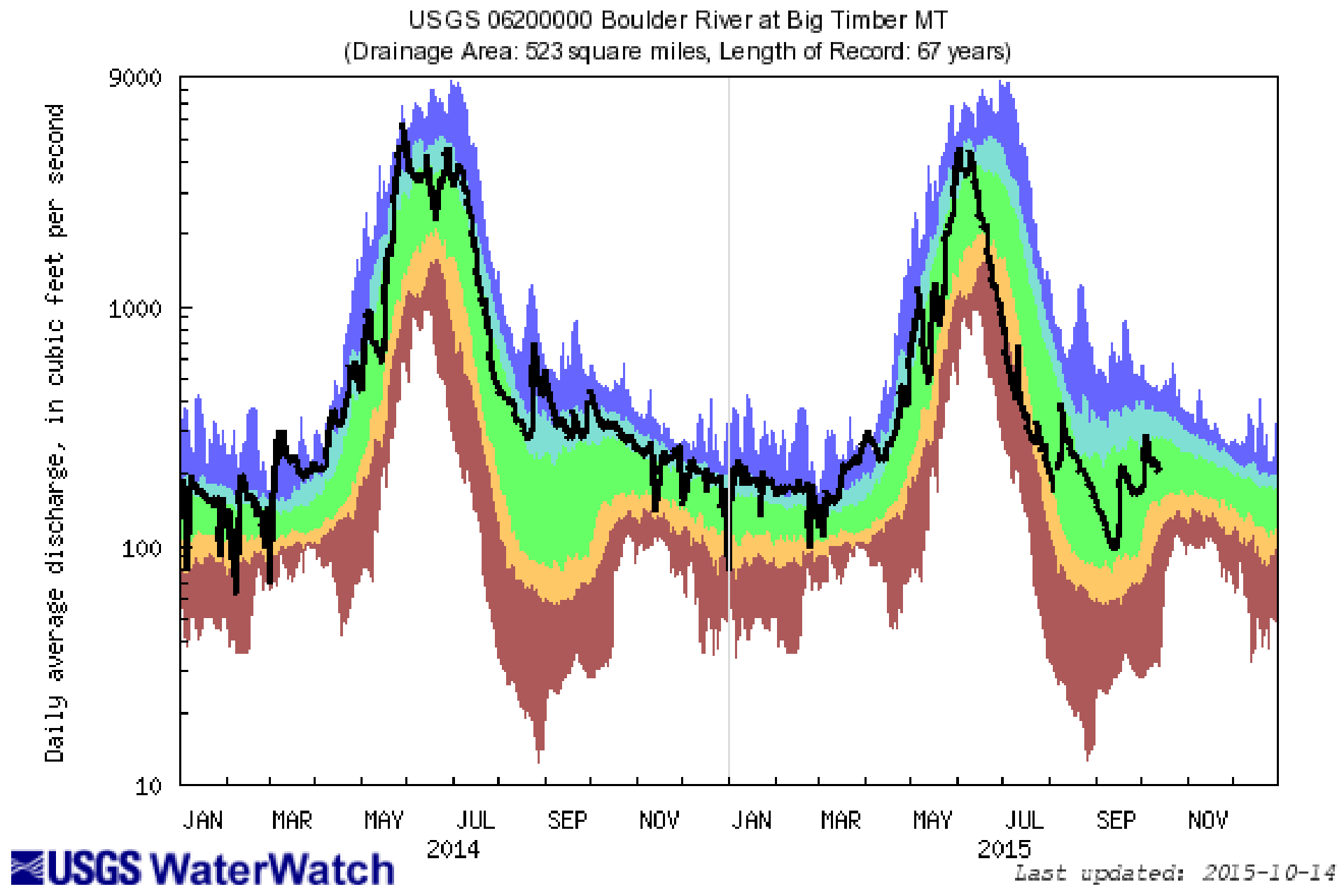

USGS 06196600 Shields River nr Livingston MT
(Drainage area: 852 square miles, Length of Record: 36 year)
Cumulative flow between daily 25th and 75th percentiles
Cumulative streamflow of daily median
Lowest observed cumulative flow (2000)
Highest observed cumulative flow (1997)
Observed cumulative flow (2015)
Cumulative Streamflow, in millions of cubic feet
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
OCT
NOV
2014
DEC
JAN
FEB
MAR
APR
MAY
2015
JUN
JUL
AUG
SEP
USGS WaterWatch
Last updated: 2015-10-14


USGS 06200000 Boulder River at Big Timber MT
(Drainage Area: 523 square miles, Length of Record: 67 years)
Daily average discharge, in cubic feet per second
9000
1000
100
10
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile-highest
Flow
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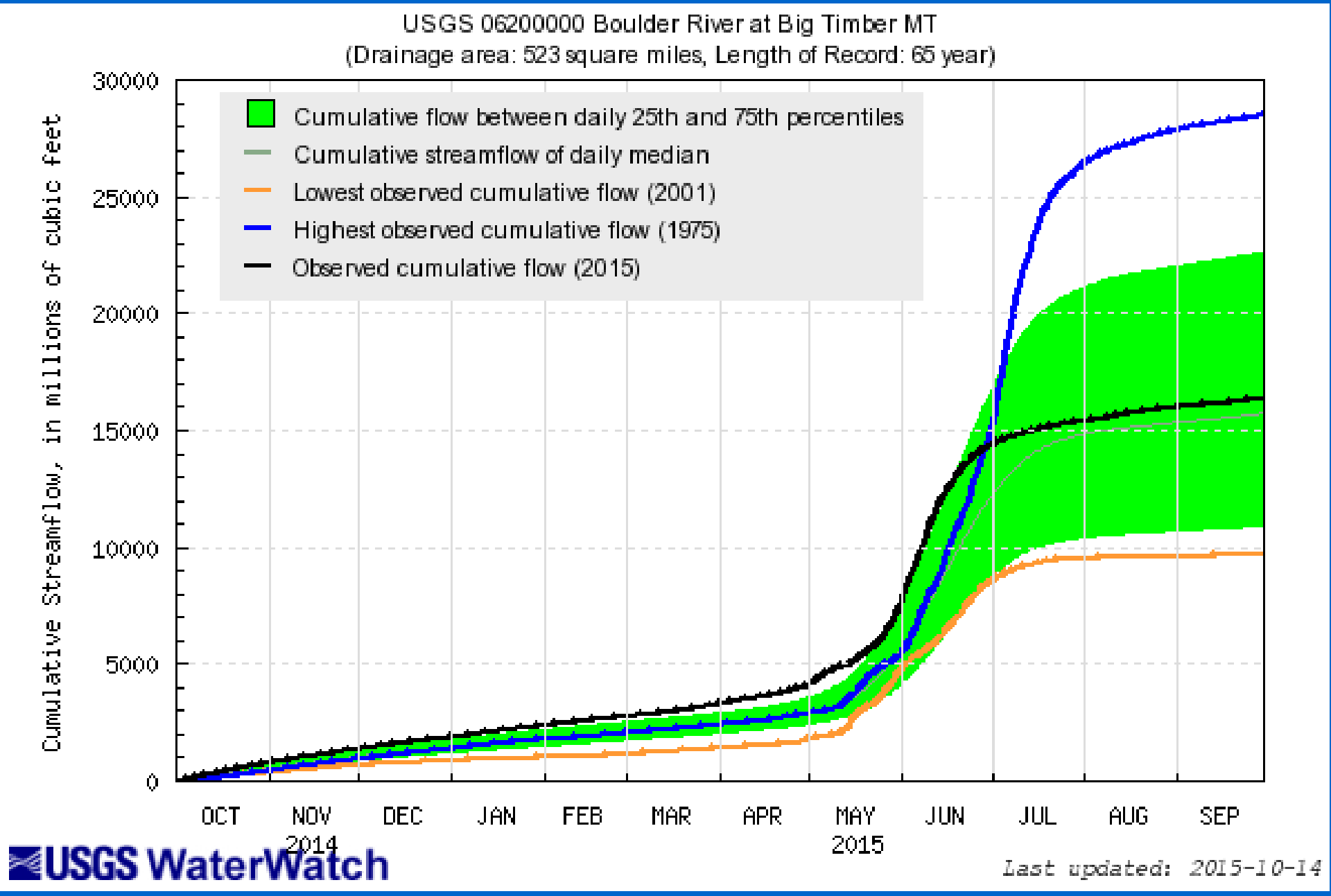
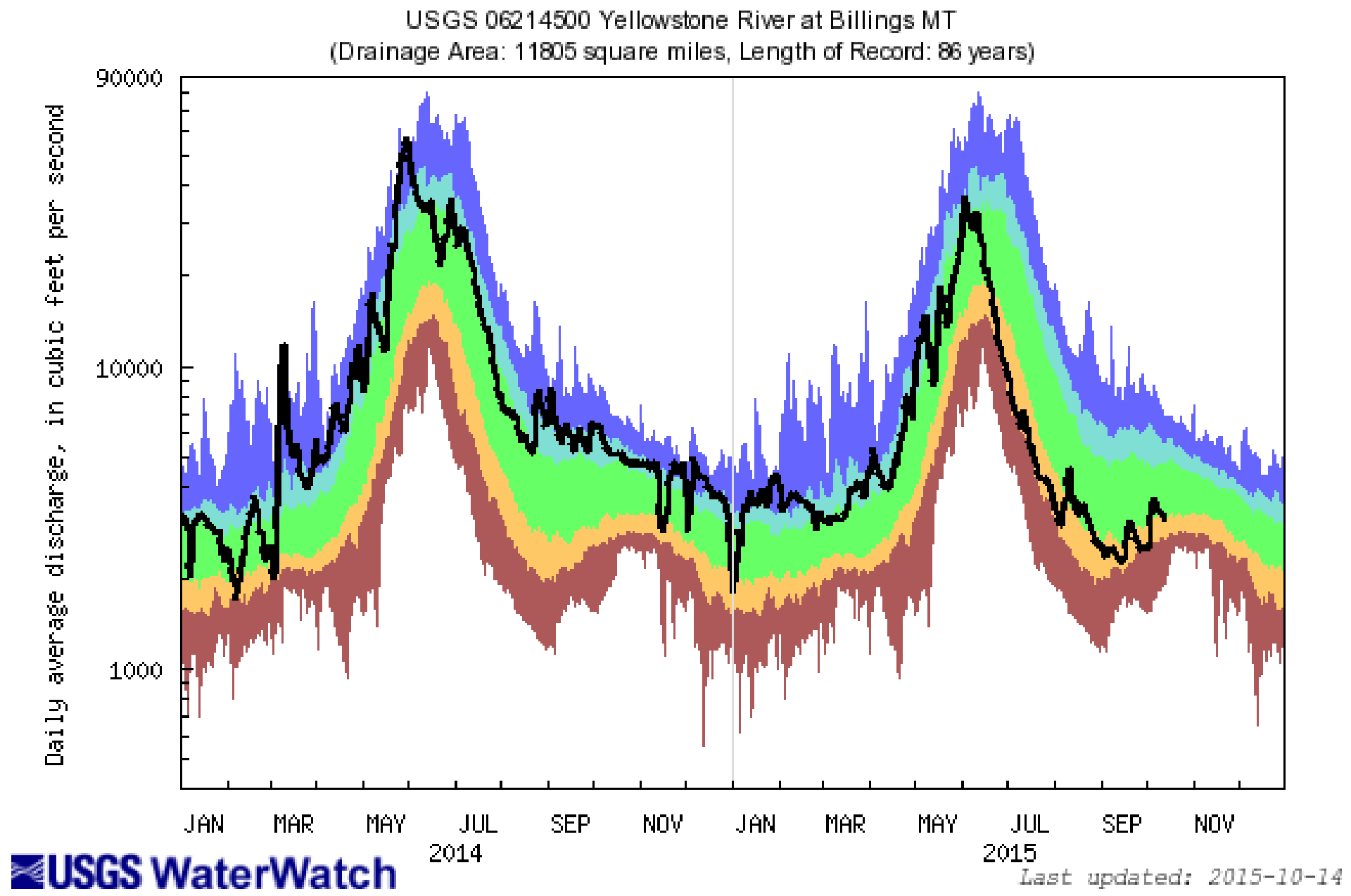
Below normal
Normal
Above normal
Much above normal



USGS WaterWatch

Last updated: 2015-10-14


USGS 06214500 Yellowstone River at Billings MT
(Drainage Area: 11805 square miles, Length of Record: 86 years)
Daily average discharge, in cubic feet per second
90000
10000
1000
JAN
MAR
MAY
JUL
SEP
NOV
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
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10-24
25-75
76-90
90th percentile -highest
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Below normal
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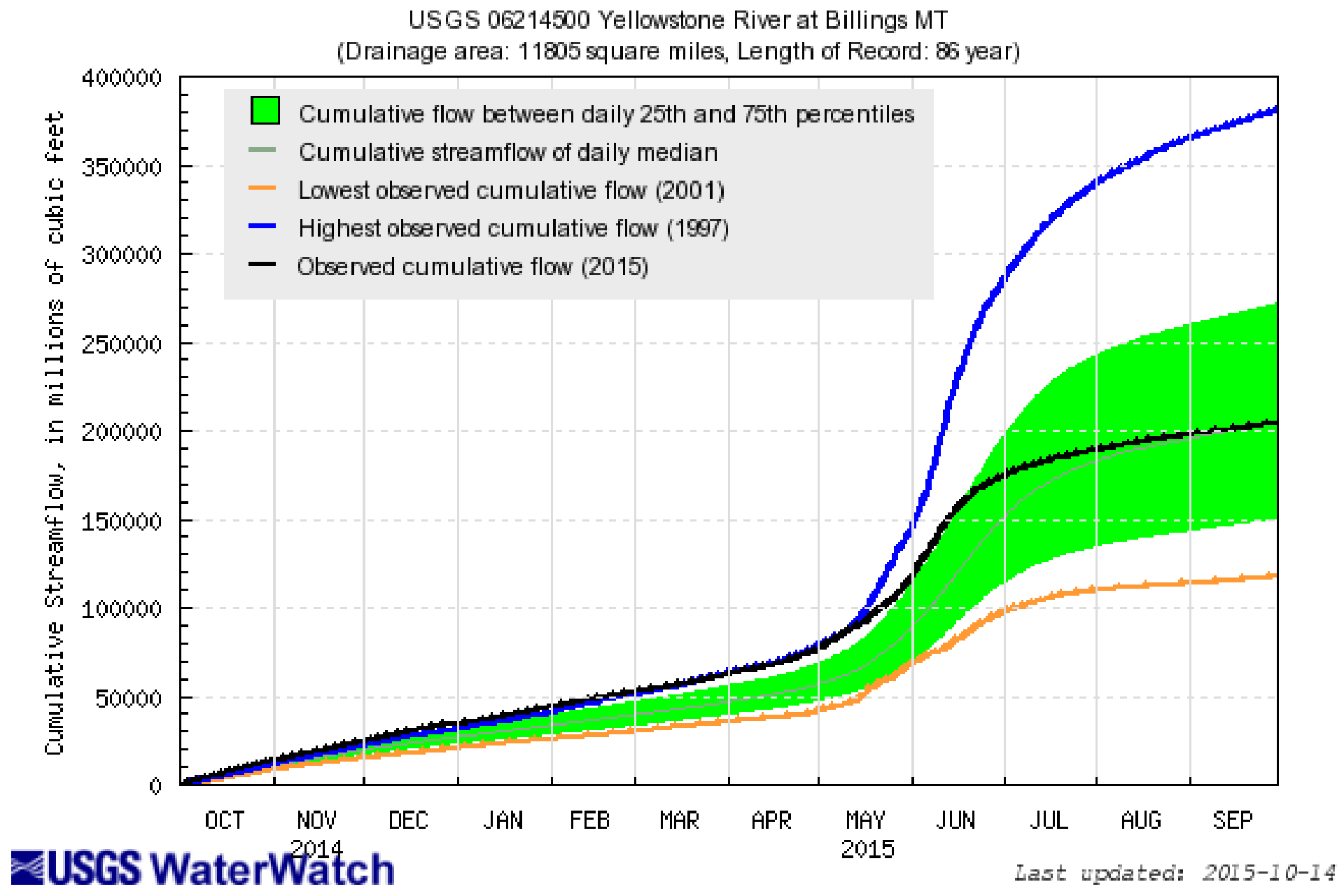
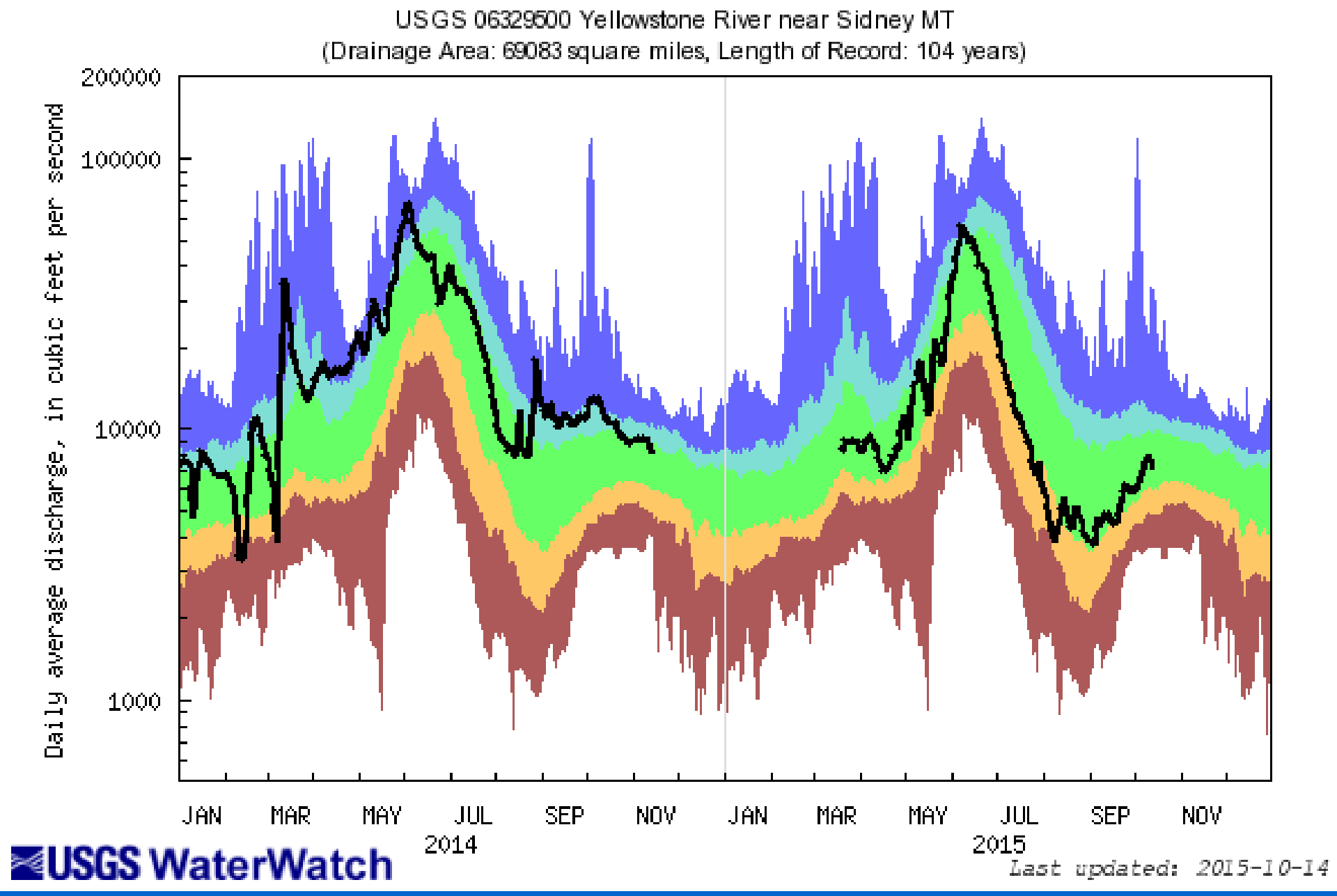
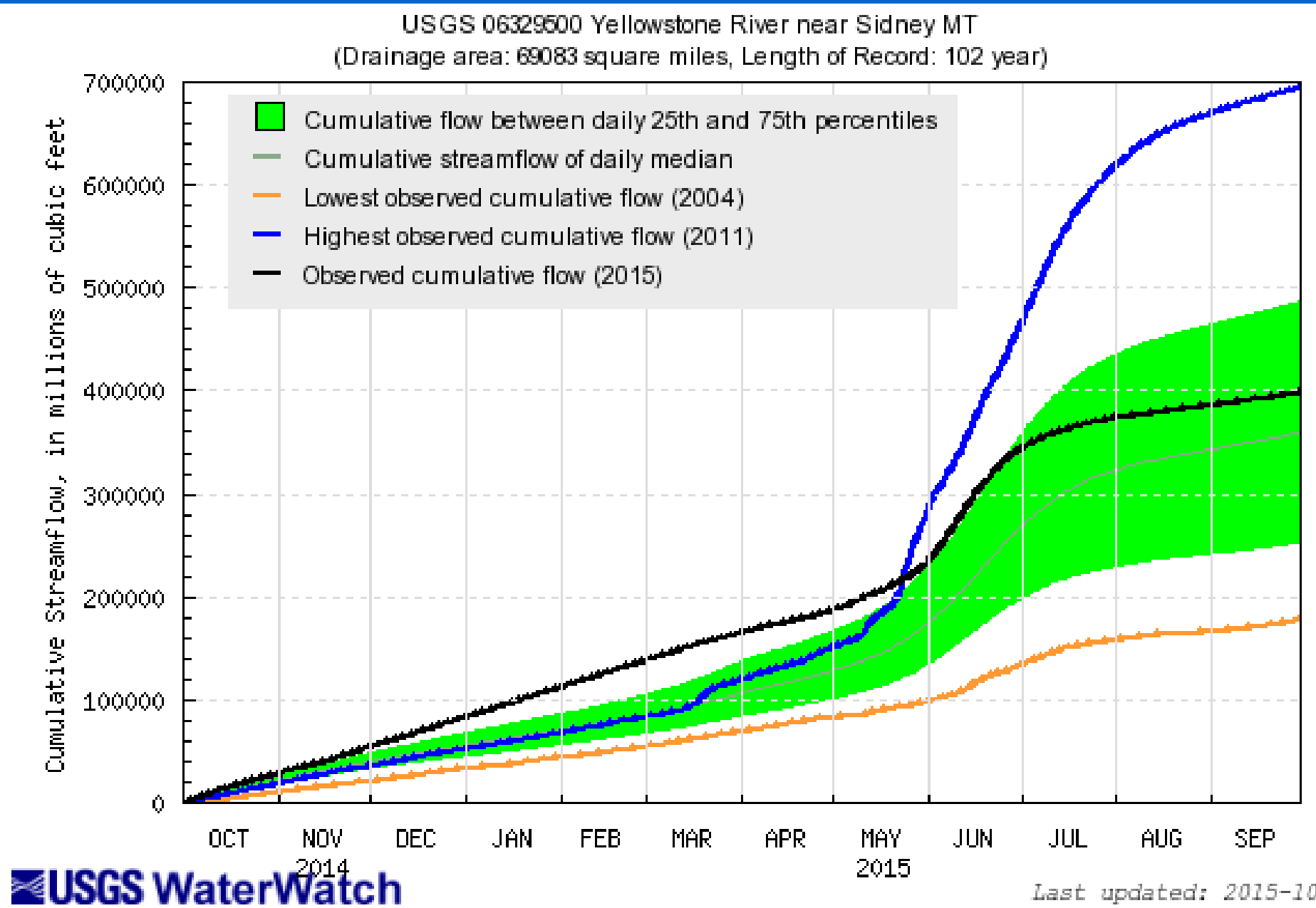
Above normal
Much above normal

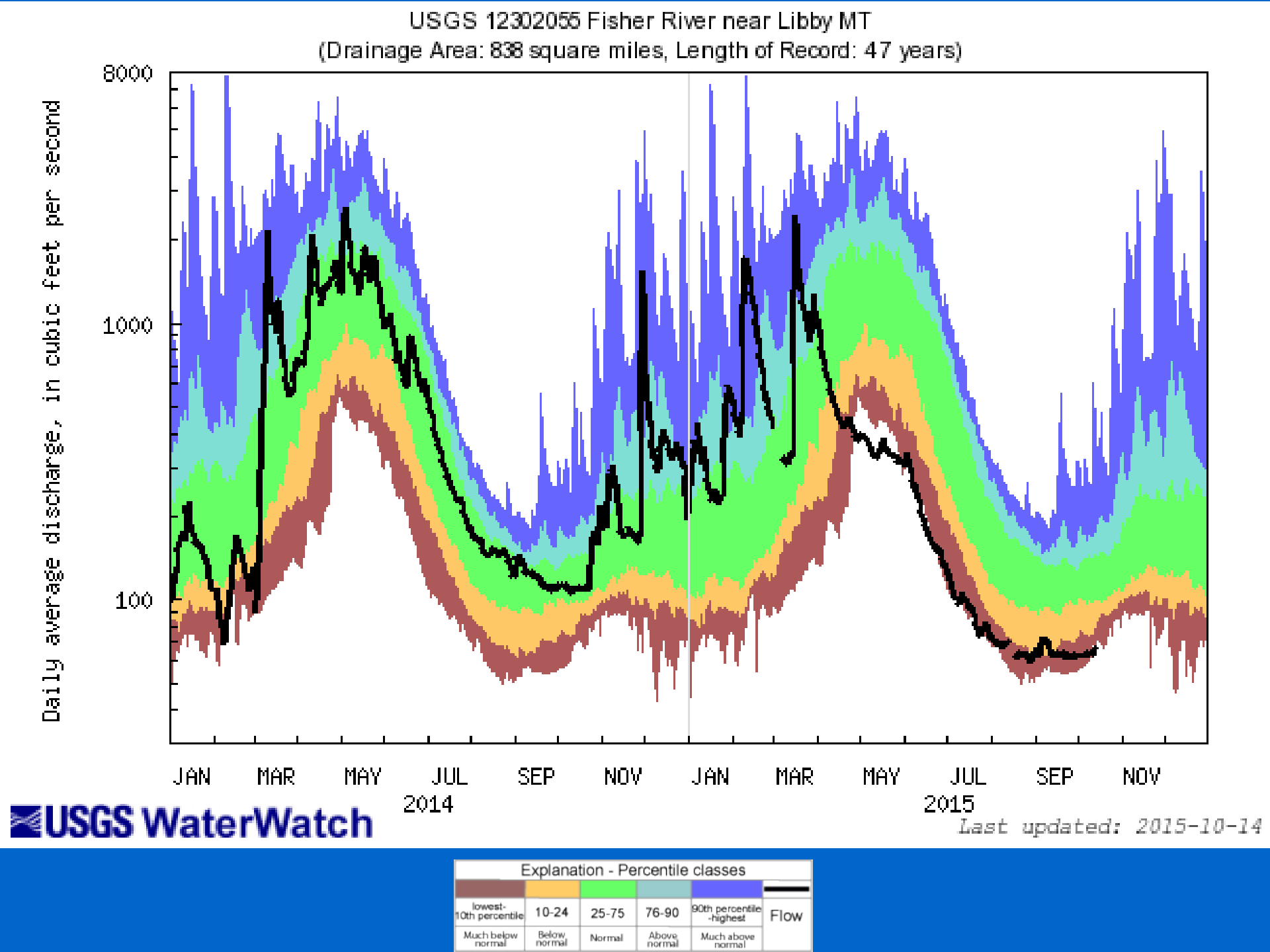


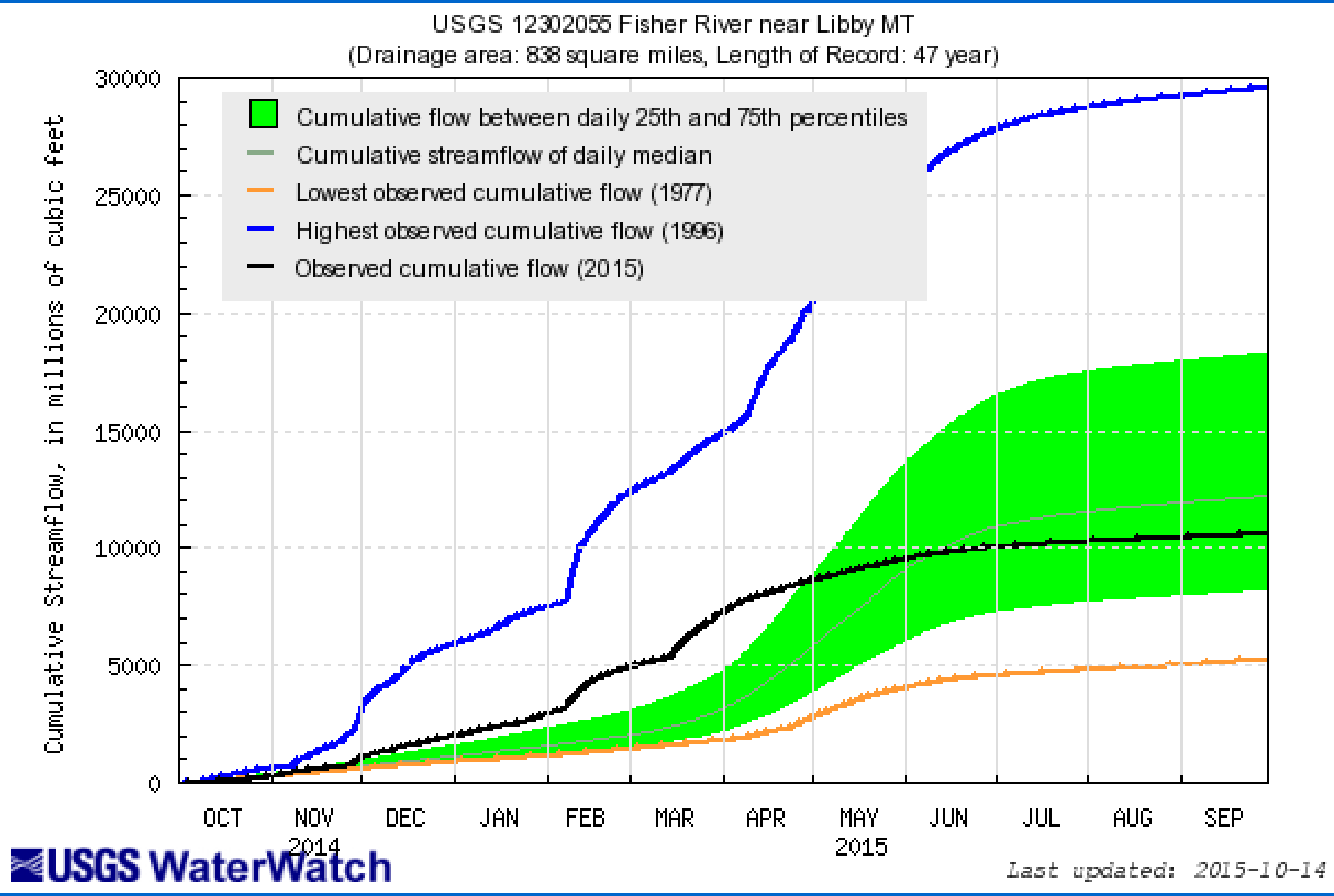
USGS WaterWatch

Last updated: 2015-10-14


USGS 06329500 Yellowstone River near Sidney MT
(Drainage Area: 69083 square miles, Length of Record: 104 years)
Daily average discharge, in cubic feet per second
200000
100000
10000
1000
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile -highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal


USGS 06329500 Yellowstone River near Sidney MT
(Drainage area: 69083 square miles, Length of Record: 102 year)
Cumulative flow between daily 25th and 75th percentiles
Cumulative streamflow of daily median
Lowest observed cumulative flow (2004)
Highest observed cumulative flow (2011)
Observed cumulative flow (2015)
Cumulative Streamflow, in millions of cubic feet
700000
600000
500000
400000
300000
200000
100000
0
OCT
NOV
2014
DEC
JAN
FEB
MAR
APR
MAY
2015
JUN
JUL
AUG
SEP
USGS WaterWatch
Last updated: 2015-10-14


USGS 12302055 Fisher River near Libby MT
(Drainage Area: 838 square miles, Length of Record: 47 years)
Daily average discharge, in cubic feet per second
8000
1000
100
JAN
MAR
MAY
JUL
SEP
NOV
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile -highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal



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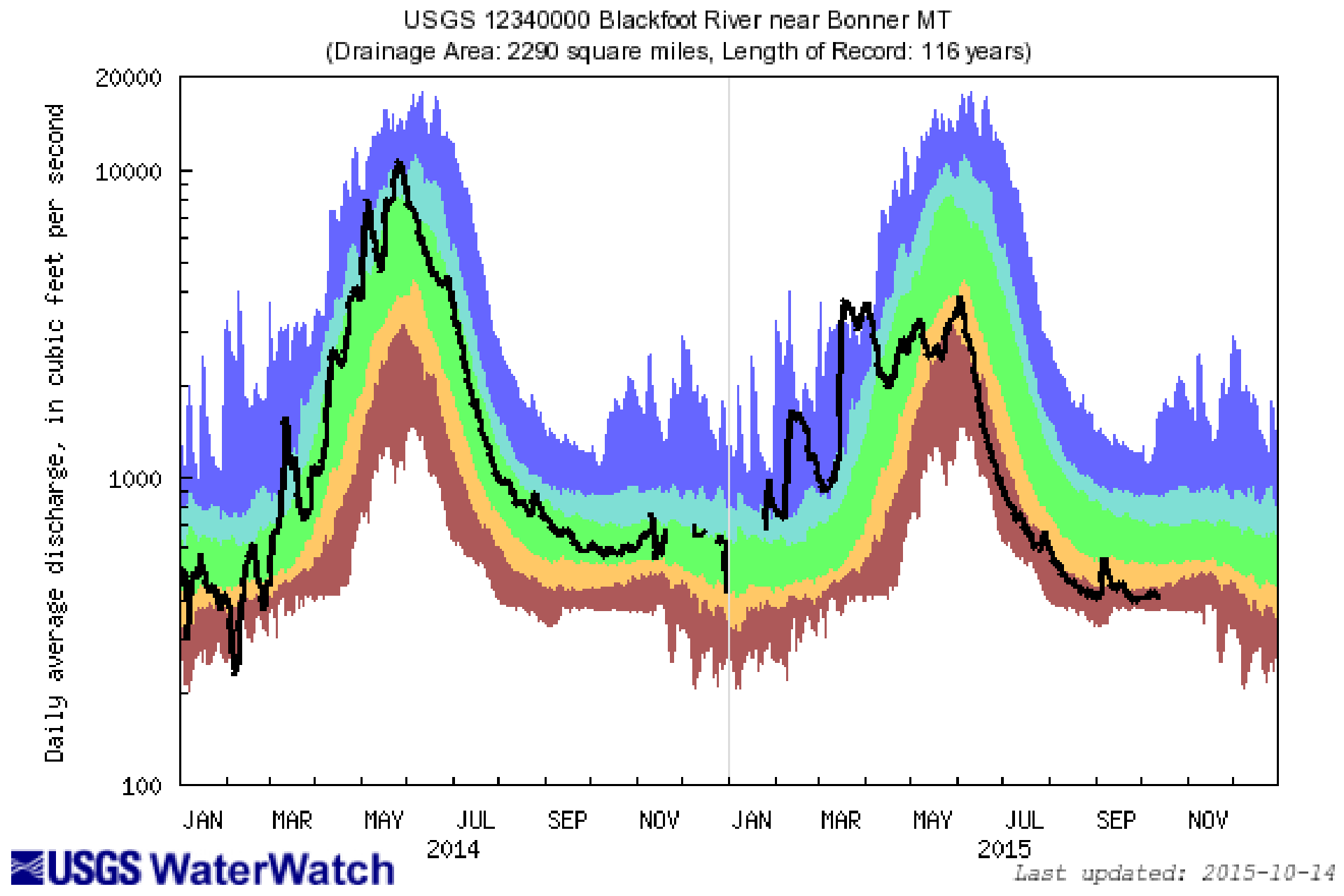
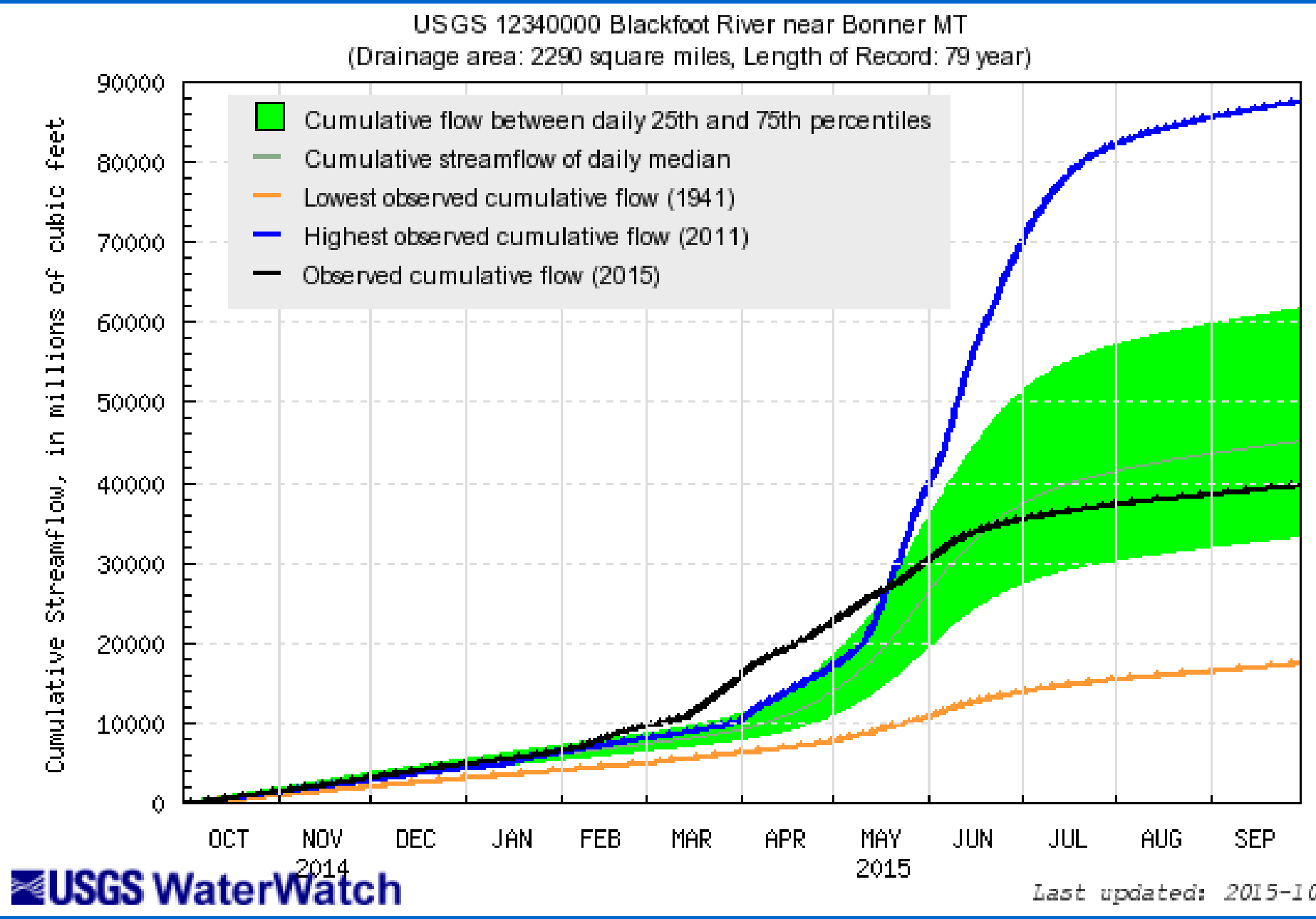
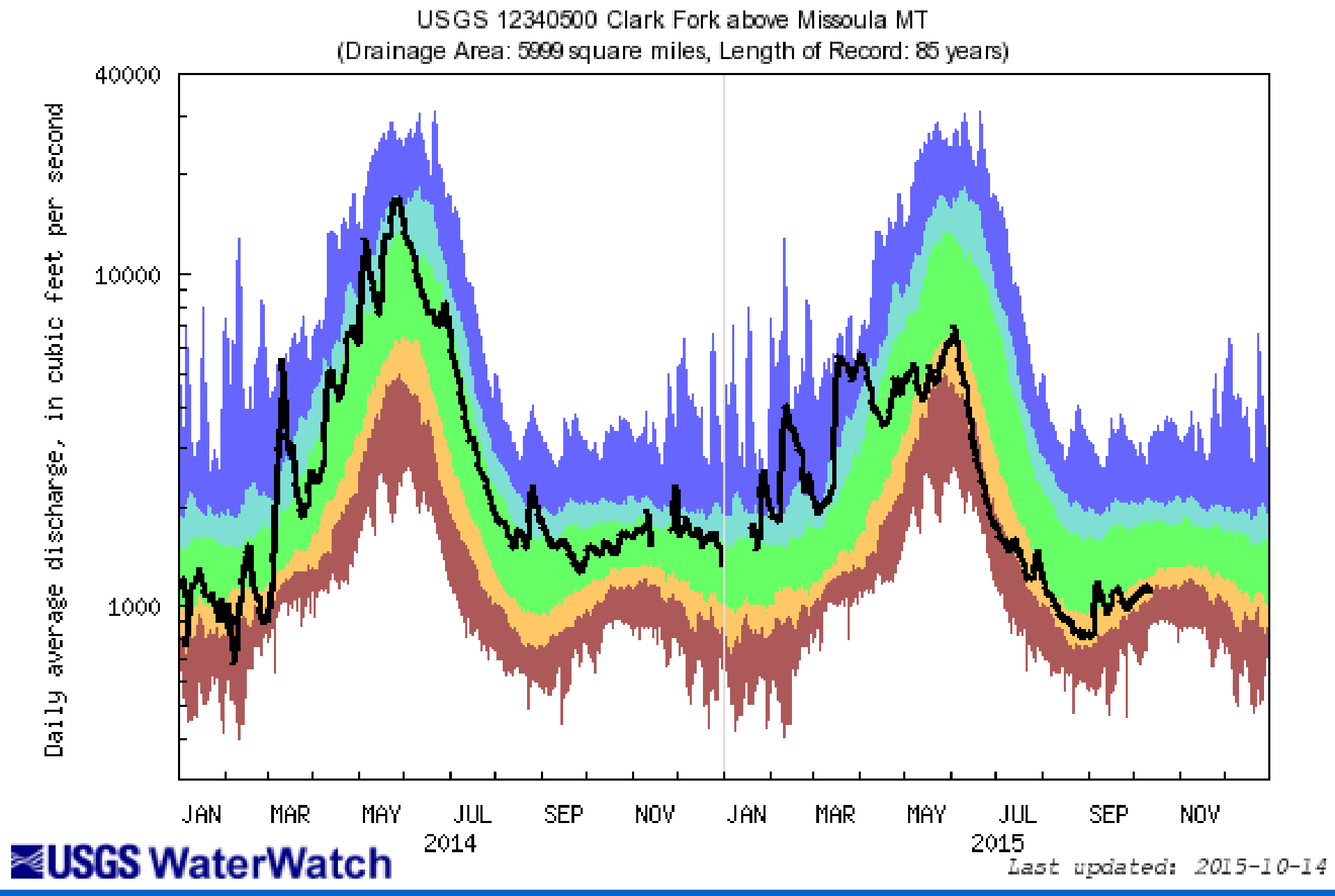
Last updated: 2015-10-14

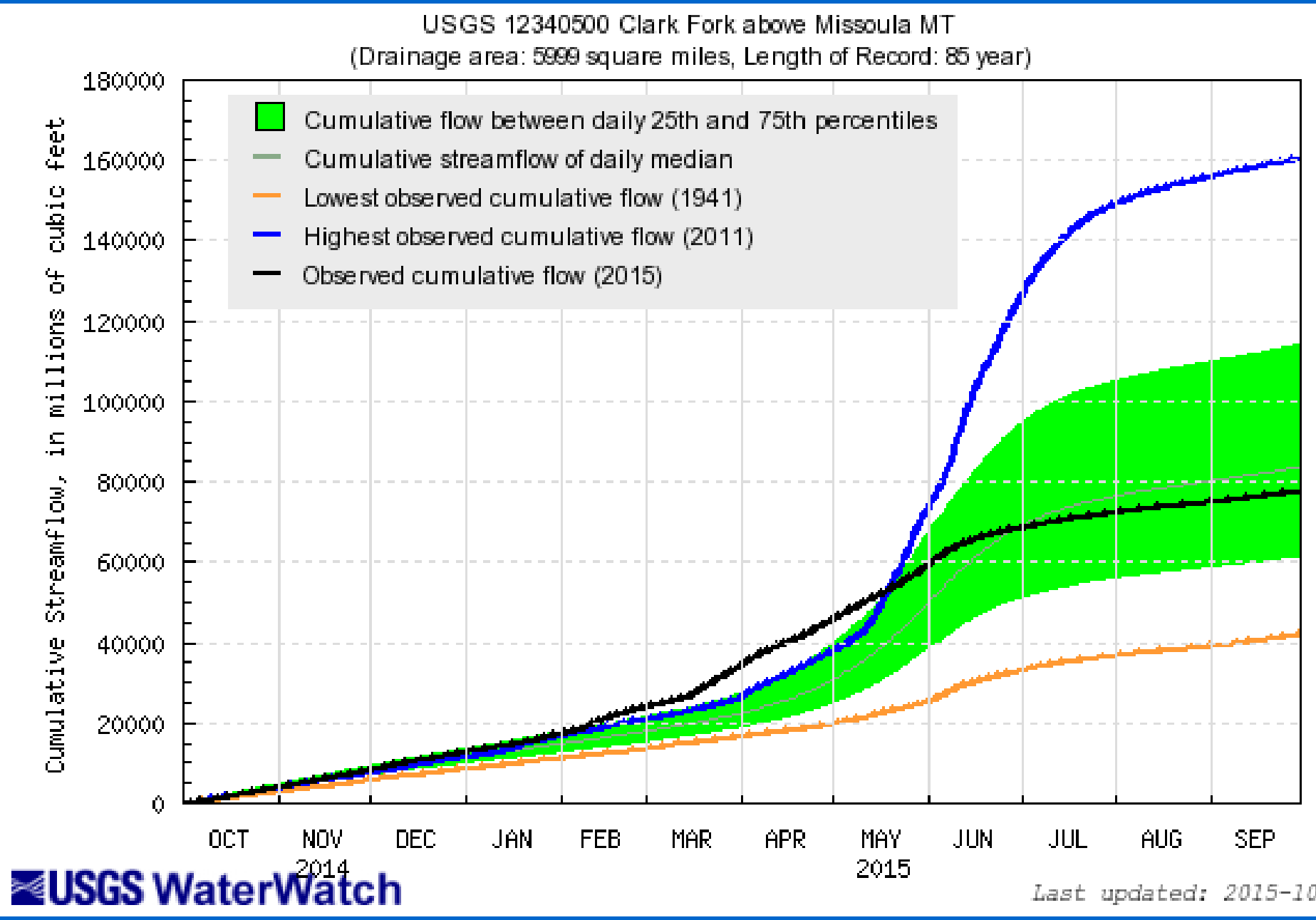

USGS 12340000 Blackfoot River near Bonner MT
(Drainage Area: 2290 square miles, Length of Record: 116 years)
Daily average discharge, in cubic feet per second
20000
10000
1000
100
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile-highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal



USGS WaterWatch

Last updated: 2015-10-14


USGS 12340500 Clark Fork above Missoula MT
(Drainage Area: 5999 square miles, Length of Record: 85 years)
Daily average discharge, in cubic feet per second
40000
10000
1000
JAN
MAR
MAY
JUL
SEP
NOV
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile-highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal



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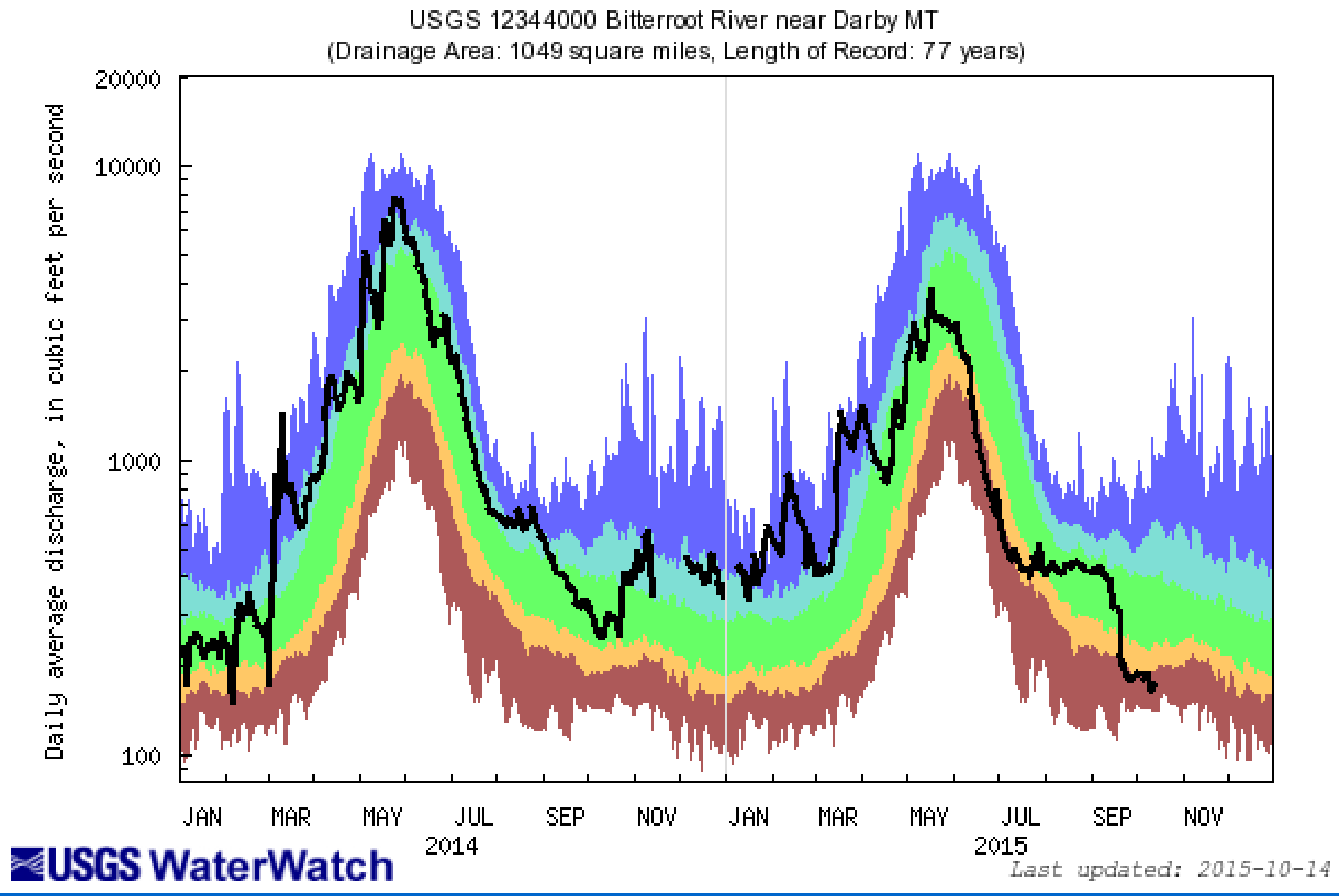
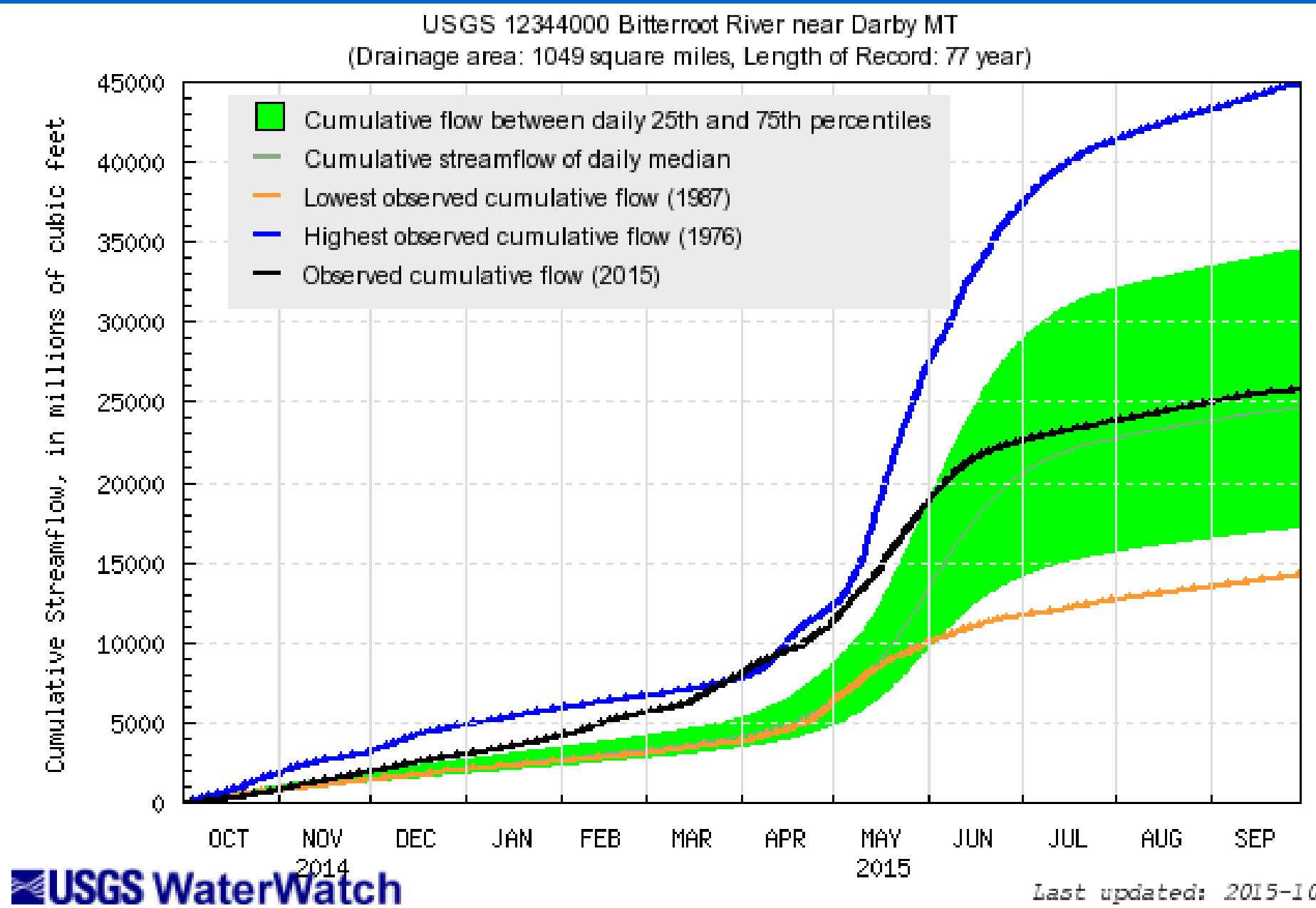
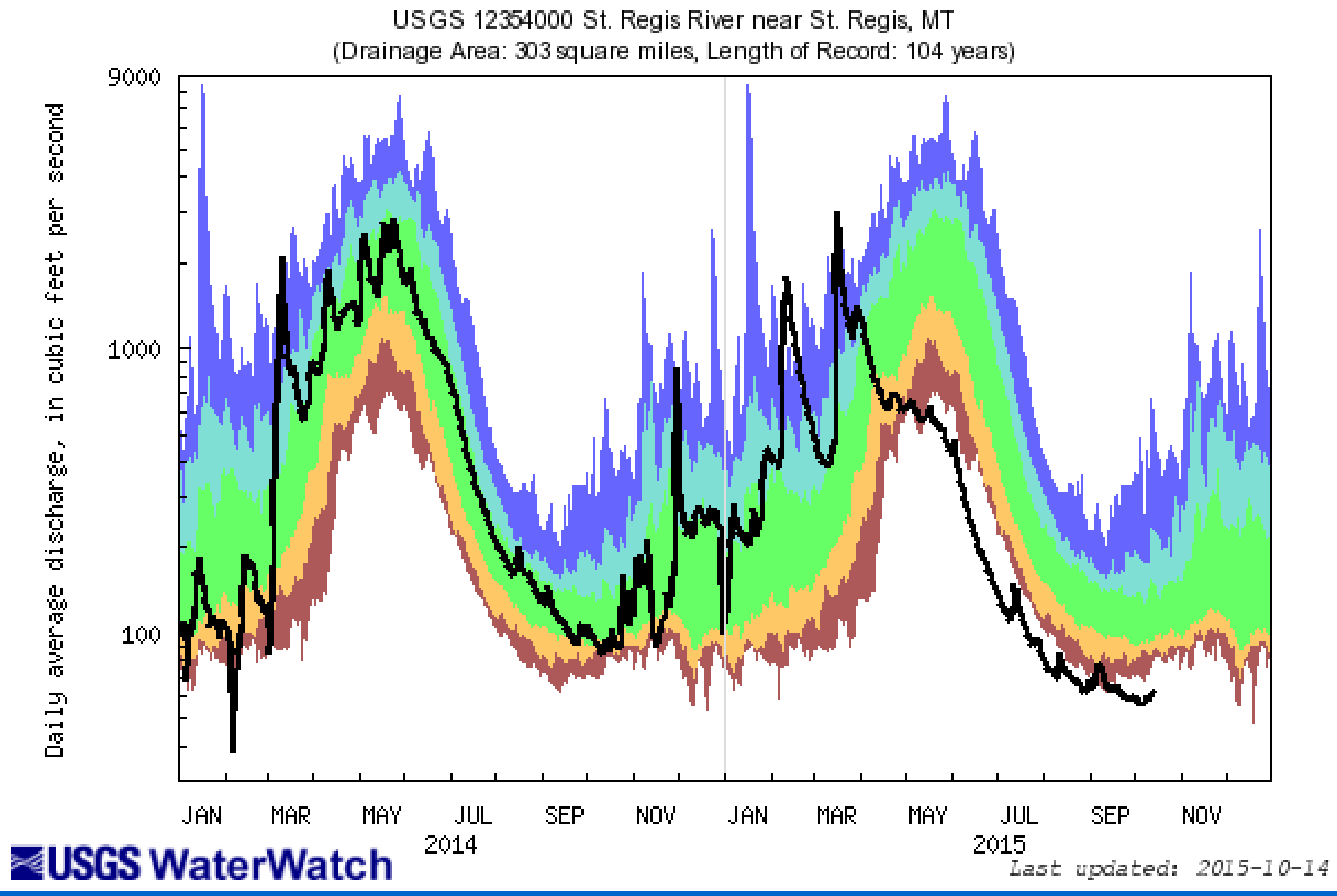
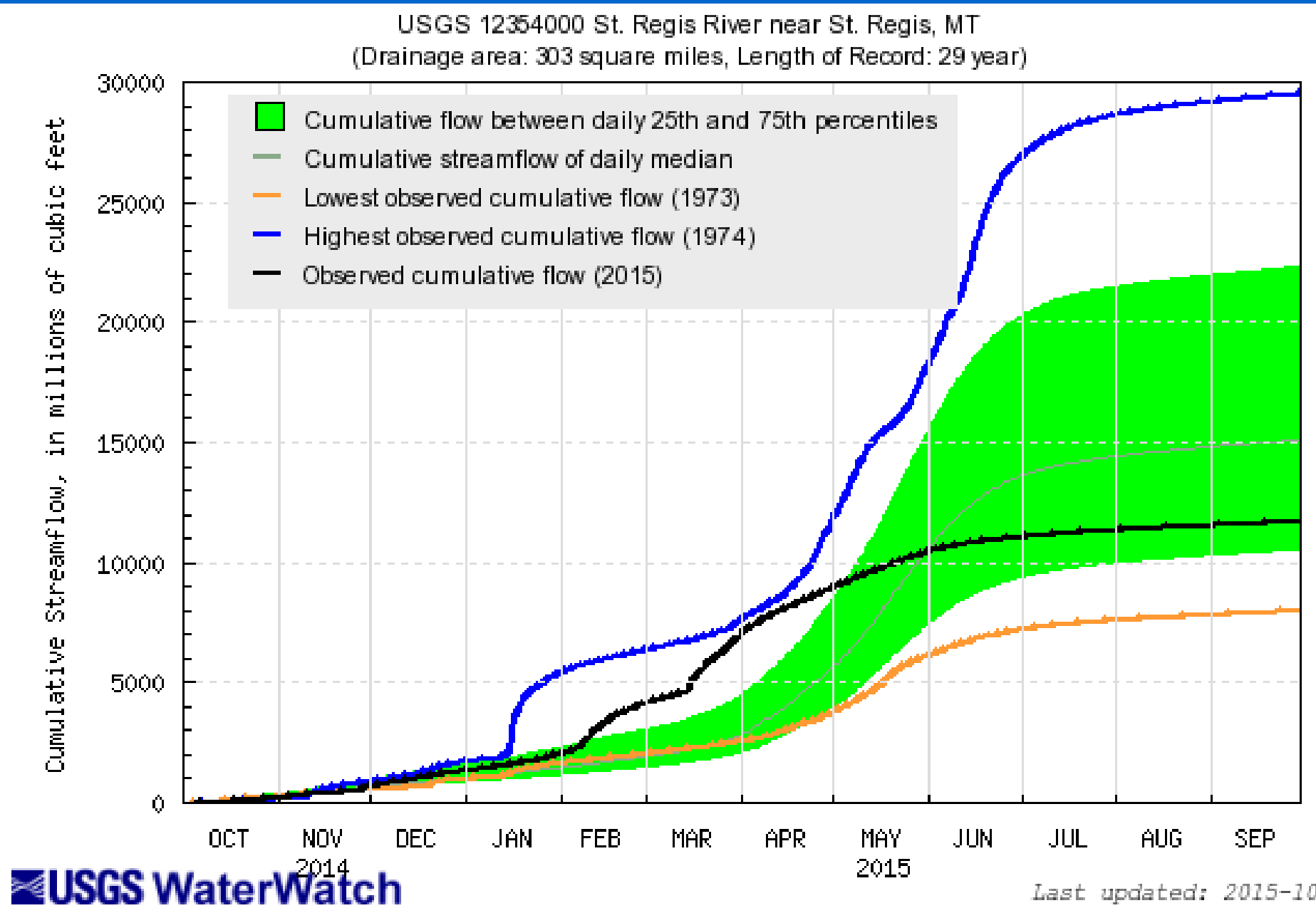

USGS 12344000 Bitterroot River near Darby MT
(Drainage Area: 1049 square miles, Length of Record: 77 years)
Daily average discharge, in cubic feet per second
20000
10000
1000
100
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile-highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal



USGS WaterWatch

Last updated: 2015-10-14


USGS 12354000 St. Regis River near St. Regis, MT
(Drainage Area: 303 square miles, Length of Record: 104 years)
Daily average discharge, in cubic feet per second
9000
1000
100
JAN
MAR
MAY
JUL
SEP
NOV
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile -highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal



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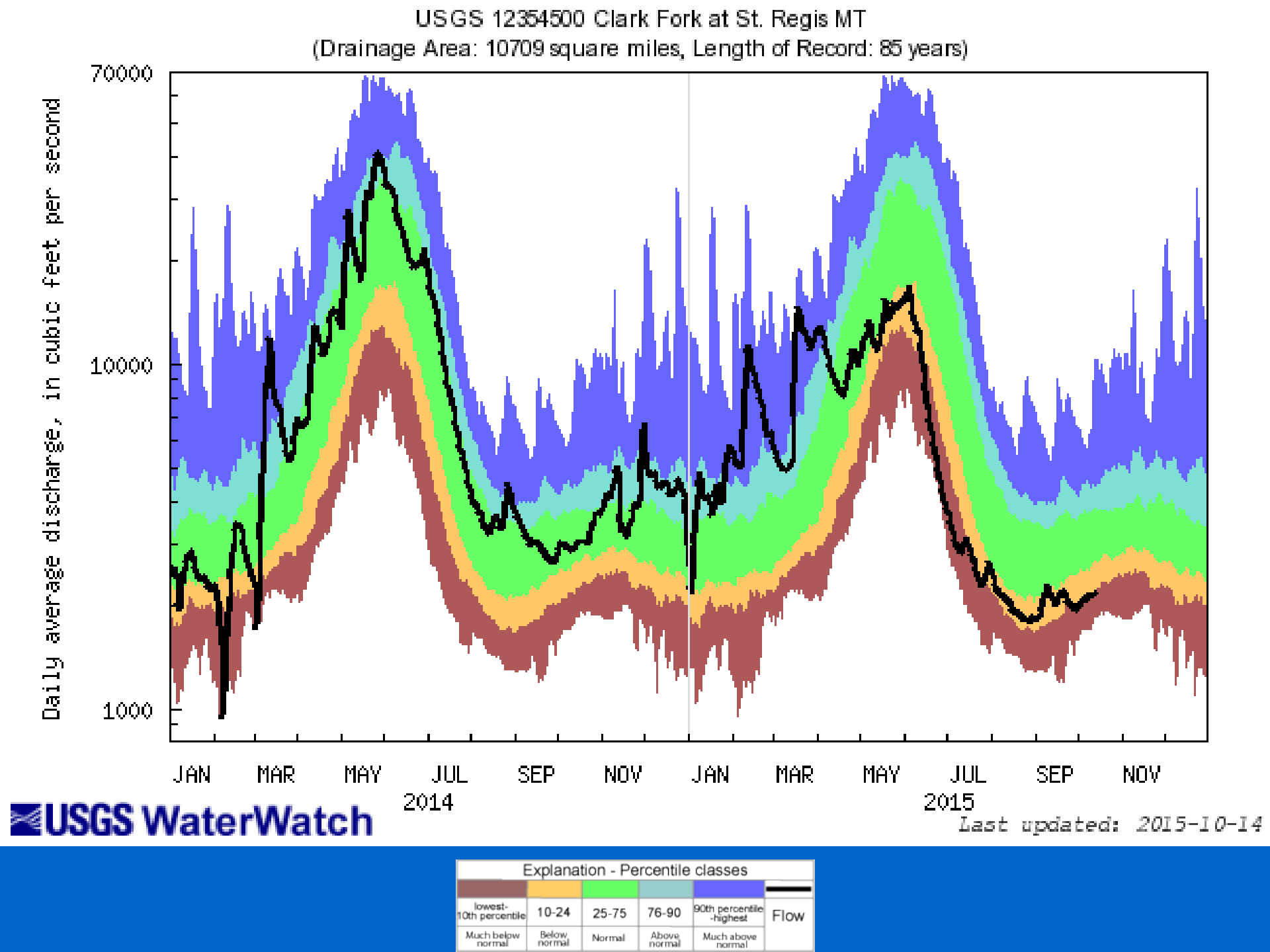
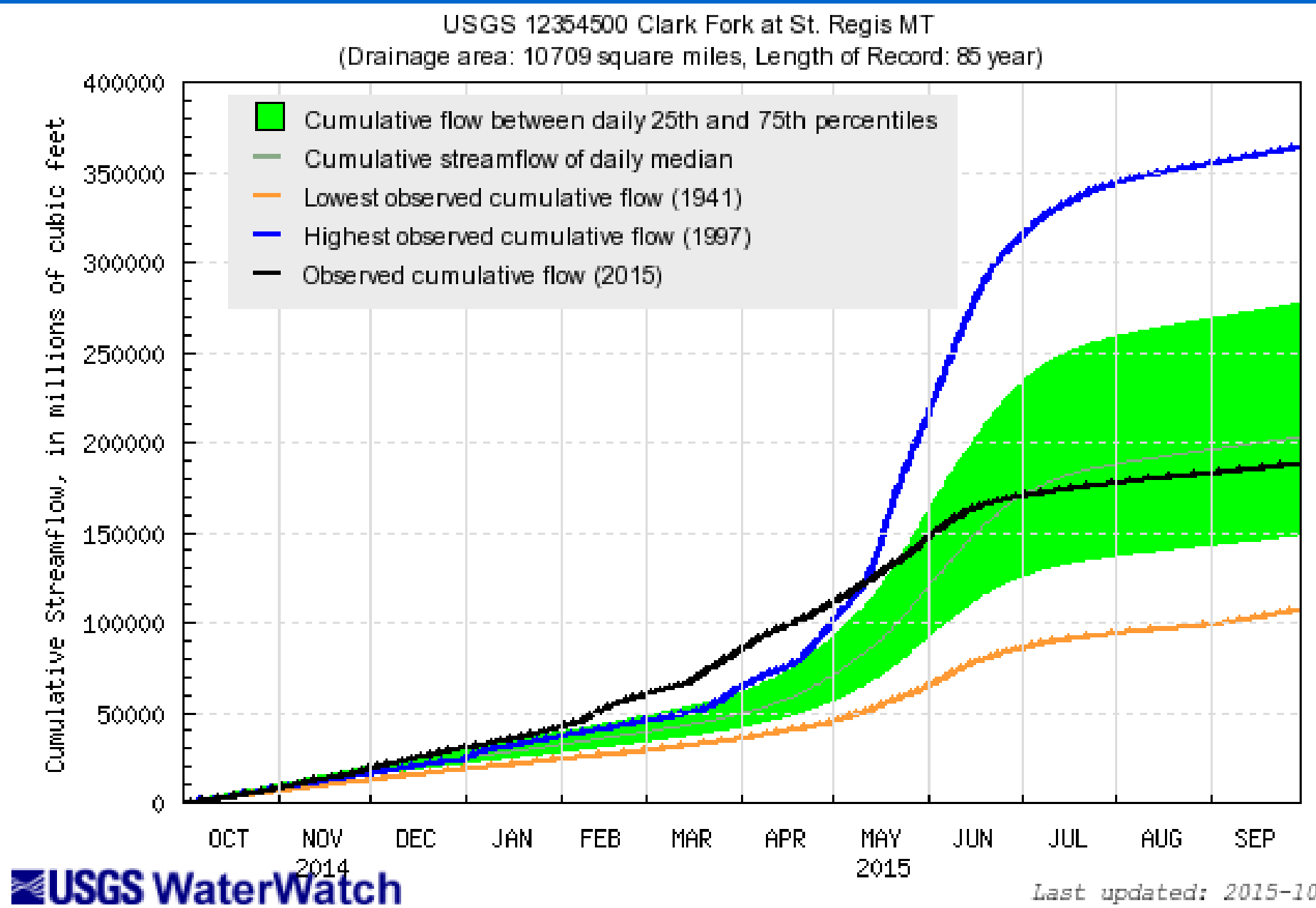

USGS 12354500 Clark Fork at St. Regis MT
(Drainage Area: 10709 square miles, Length of Record: 85 years)
Daily average discharge, in cubic feet per second
70000
10000
1000
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile-highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal



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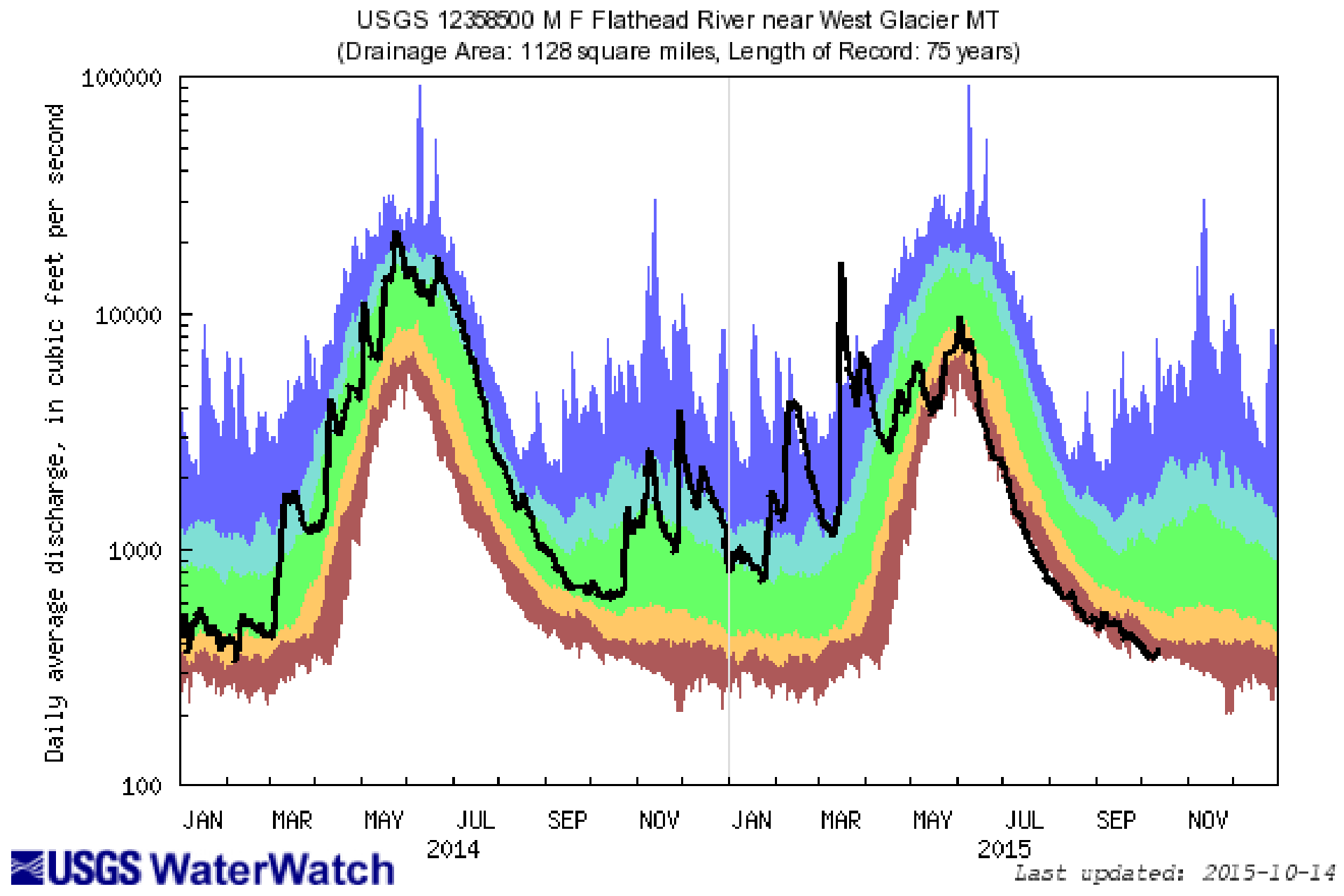
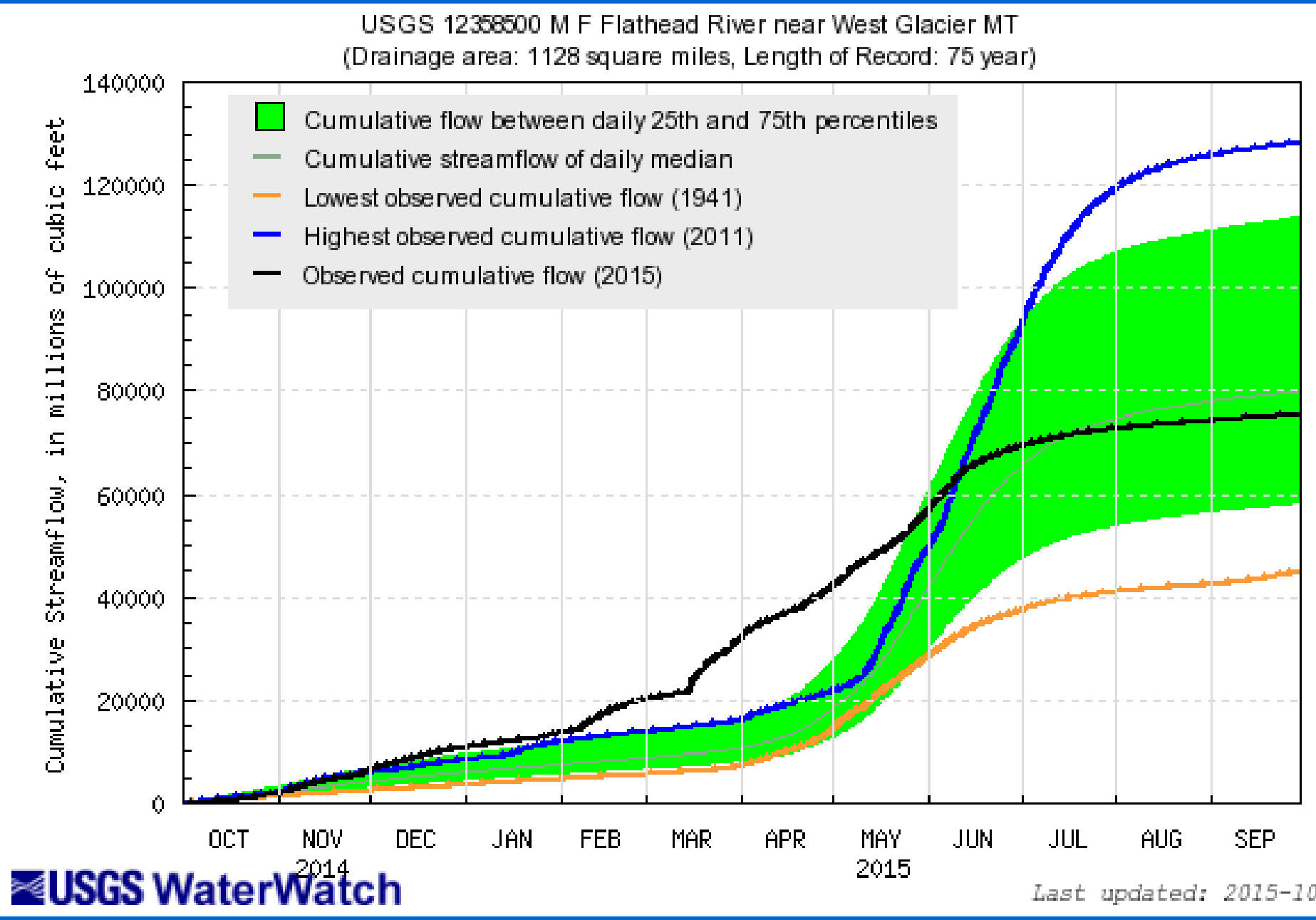
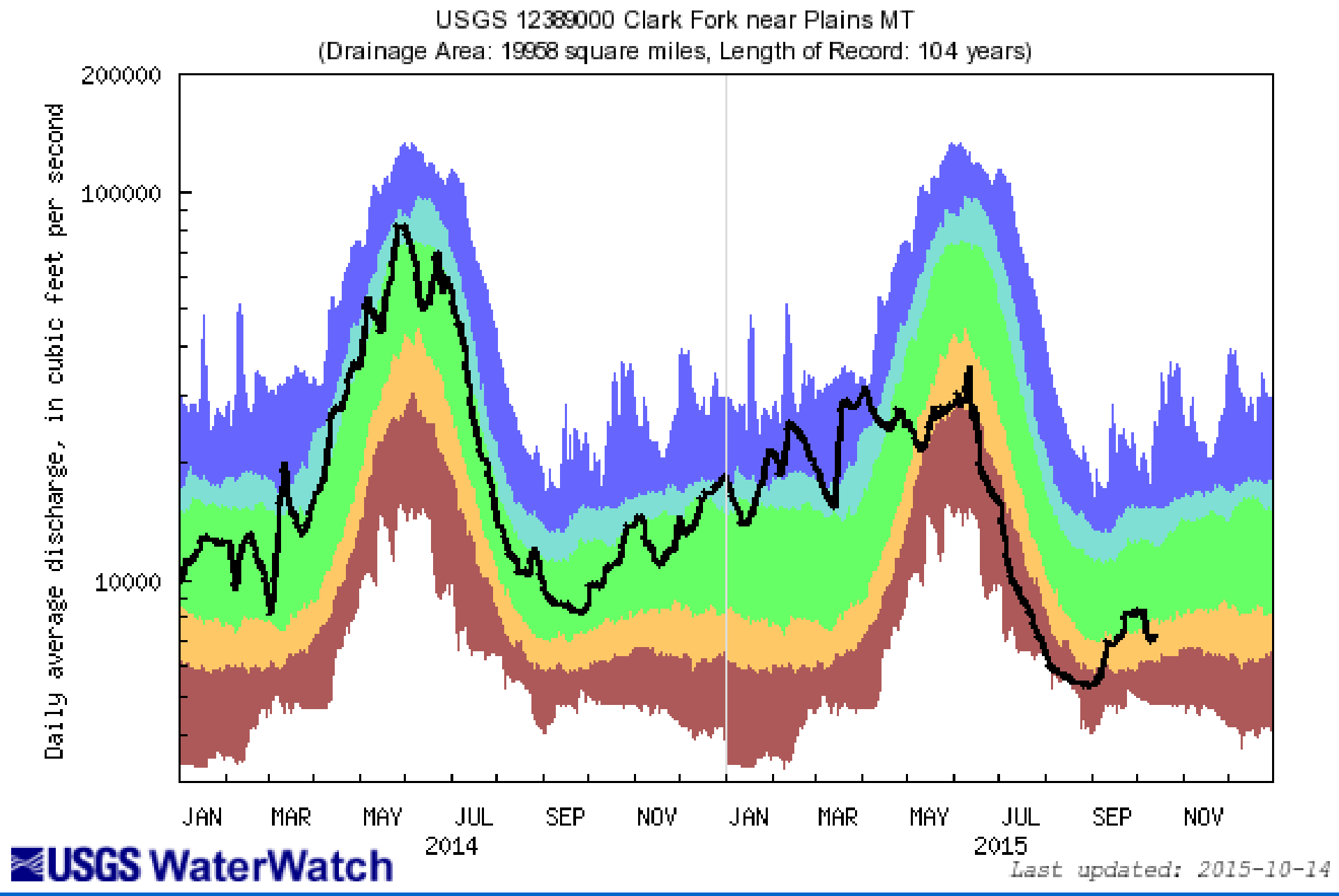

USGS 12368500 M F Flathead River near West Glacier MT
(Drainage Area: 1128 square miles, Length of Record: 75 years)
Daily average discharge, in cubic feet per second
100000
10000
1000
100
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
Last updated: 2015-10-14
Explanation - Percentile classes
lowest-10th percentile
10-24
25-75
76-90
90th percentile -highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal


USGS 12358500 M F Flathead River near West Glacier MT
(Drainage area: 1128 square miles, Length of Record: 75 year)
Cumulative Streamflow, in millions of cubic feet
140000
120000
100000
80000
60000
40000
20000
0
Cumulative flow between daily 25th and 75th percentiles
Cumulative streamflow of daily median
Lowest observed cumulative flow (1941)
Highest observed cumulative flow (2011)
Observed cumulative flow (2015)
OCT
NOV
2014
DEC
JAN
FEB
MAR
APR
MAY
2015
JUN
JUL
AUG
SEP
USGS WaterWatch
Last updated: 2015-10-14


USGS 12389000 Clark Fork near Plains MT
(Drainage Area: 19958 square miles, Length of Record: 104 years)
Daily average discharge, in cubic feet per second
200000
100000
10000
JAN
MAR
MAY
JUL
SEP
NOV
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
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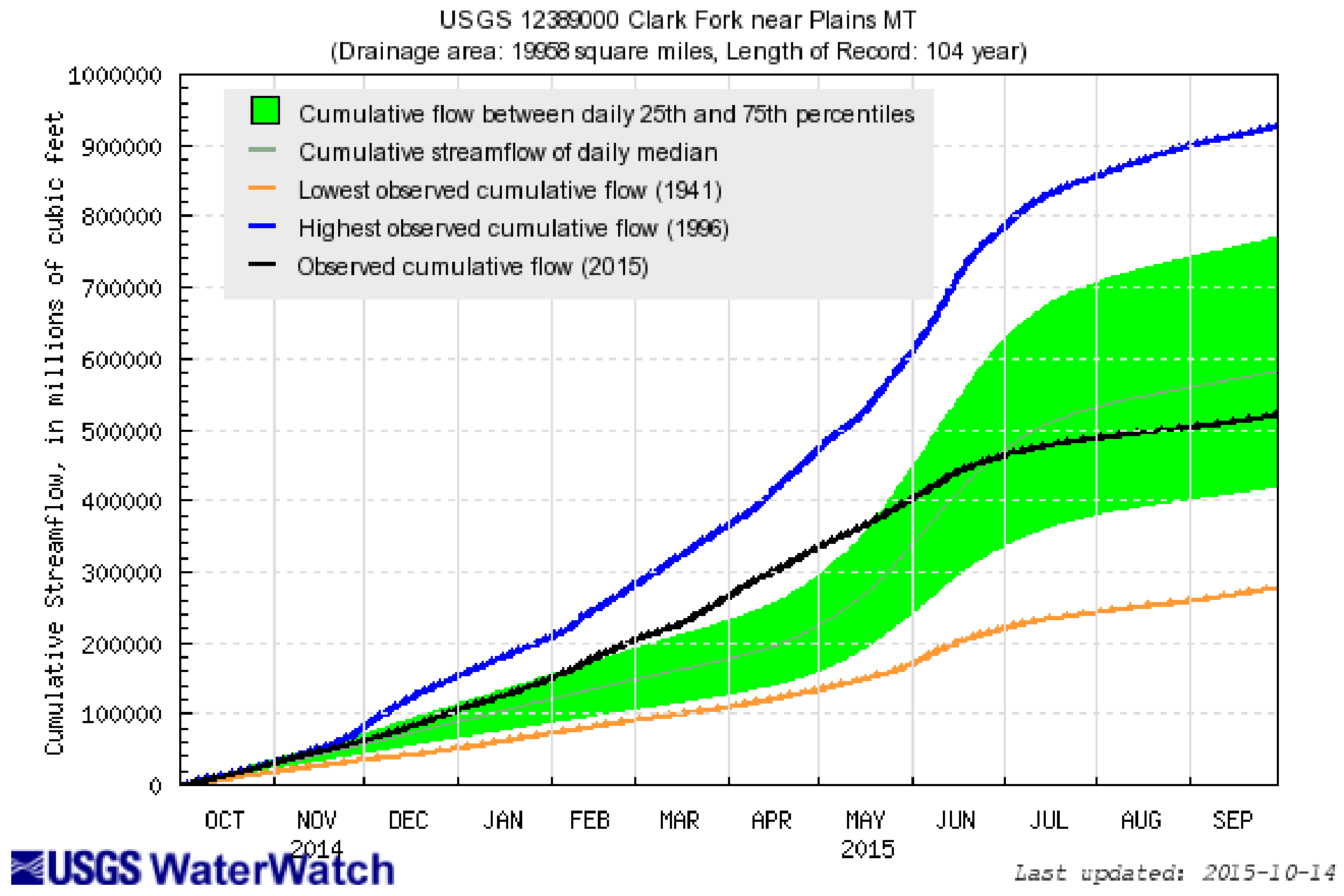
lowest-10th percentile
10-24
25-75
76-90
90th percentile-highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal



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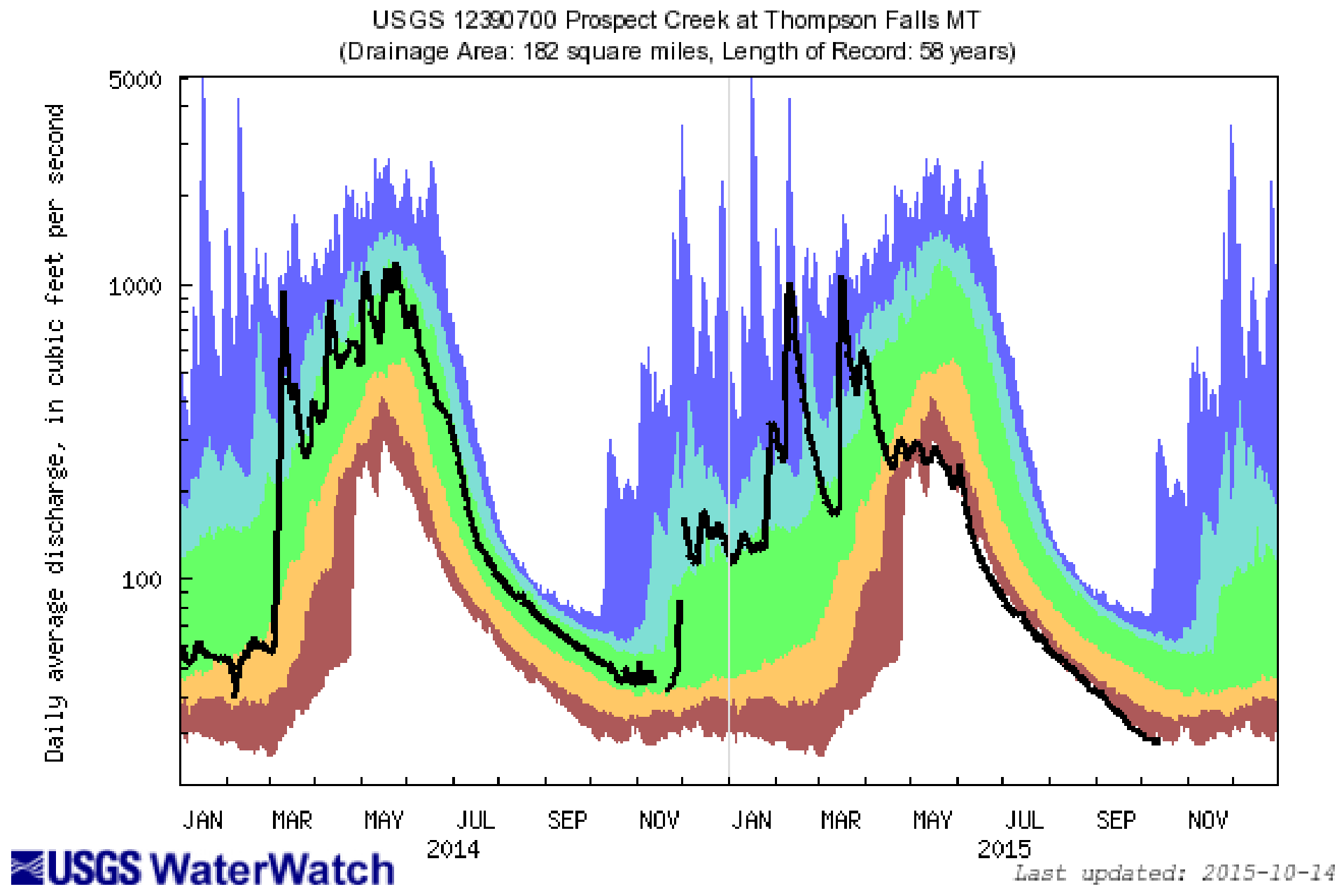
USGS 12390700 Prospect Creek at Thompson Falls MT
(Drainage Area: 182 square miles, Length of Record: 58 years)
Daily average discharge, in cubic feet per second
5000
1000
100
JAN
MAR
MAY
JUL
SEP
NOV
JAN
MAR
MAY
JUL
SEP
NOV
2014
2015
USGS WaterWatch
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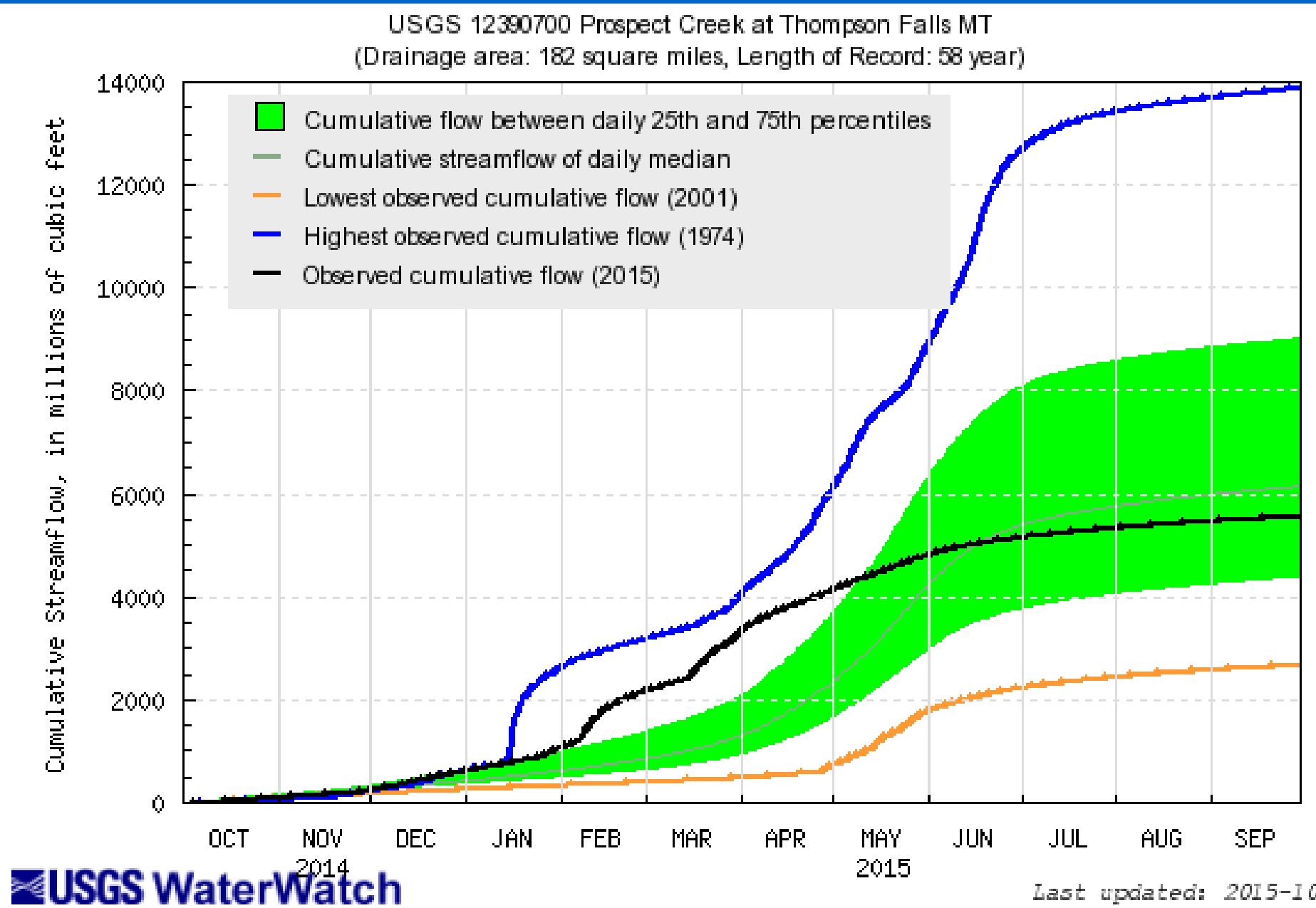
lowest-10th percentile
10-24
25-75
76-90
90th percentile-highest
Flow
Much below normal
Below normal
Normal
Above normal
Much above normal



USGS WaterWatch

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USGS Home Page: http://usgs.gov

NwisWeb: http://water.usgs.gov/mt/nwis
Access to streamflow (realtime and historical), water quality, and ground water information.

Montana District Home Page: http://mt.usgs.gov
Montana Current Streamflow Conditions